

Committee Decisions on Monetary Policy:
The FOMC under Arthur Burns and Alan Greenspan*

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CHAIRMAN GREENSPAN: In the immediate period ahead, it strikes me that the general outlook is extraordinarily benevolent and one that I view at the moment as pointing to no change in policy. That is, “B” and symmetrical seems to me the most sensible approach until the next meeting.

MR. HOENIG: Mr. Chairman, I support your policy proposal.

MR. LINDSEY: I support your policy proposal

VICE CHAIRMAN MCDONOUGH: As do I, Mr. Chairman.

MR. KELLEY: As do I, Mr. Chairman.

MS. MINEHAN: As do I, Mr. Chairman

MR. BOEHNE: I support your proposal.

MR. FORRESTAL: Ditto, Mr. Chairman.

MR. PARRY: The same.

MR. MELZER: I support it, Alan.

MR. STERN: I support it as well.

MR. BROADDUS: Me, too.

MR. JORDAN: I agree.

MS. PHILLIPS: I also.

MS. YELLEN: I support your proposal, too.

MR. MOSKOW: I support it, Mr. Chairman.

MR. BLINDER: So do I.

CHAIRMAN GREENSPAN: ... We’ll have lunch earlier than usual! [*FOMC Transcripts*, August 22, 1995, pp. 36-37]¹

Central banks, including the Federal Reserve, are often criticized for being “undemocratic,” but they are also criticized for being “political.” On one hand, the Fed is pictured as an elitist institution with little regard for the welfare of those who might be harmed by business cycle fluctuations. On the other, the literature on central banking suggests a number of ways in which political influences might be pathological. For example, partisan and electoral political business cycles might lead to swings in the stance of monetary policy related to the electoral calendar (Alesina and Sachs 1988; Beck 1982, 1984, 1987; Chappell and Keech 1986, 1988; Grier 1987, 1989; McGregor 1996; Nordhaus 1975).

In the United States, monetary policy decisions are made by the Fed’s Federal Open Market Committee (FOMC). The members of this Committee are not popularly elected, but some members are political appointees and all are

¹ The excerpt omits Greenspan’s comments recognizing members in turn.

subject to some political pressures.² Because decisions within the Committee are formally made via majority voting, there would seem to be at least a modest democratic element to monetary policymaking. Yet a common perception is that the FOMC is really controlled by its Chairman, whose powers within the Committee make him a *de facto* dictator.

In a recent book (Chappell, McGregor, and Vermilyea 2005), we have summarized research on the political environment of monetary policymaking that we have pursued over a number of years. The central issues we have investigated concern the role and power of the Chairman and the nature of collective decision-making within the FOMC. To investigate Committee decisions, we have examined formal voting records and detailed transcripts and summaries of FOMC meeting discussions. In many respects, the FOMC provides an excellent case for investigating theories of committee decision-making—the FOMC meets repeatedly to vote on a single issue of importance, and the data describing both preferences and choices are remarkably detailed.

For the Burns era, we used data from the FOMC transcripts to estimate implied power shares for the Chairman and the remainder of the Committee in collective decision-making. We have found that power was roughly evenly divided between the Chairman and the rest of the Committee. Greenspan managed the FOMC somewhat differently than Burns did, and one consequence is that it is more difficult to assess relative power shares. As the example that heads this paper suggests, Committee members often reported preferences identical to those of the Chairman. If the preferences of the Chairman and the median voter are always identical, it is difficult to use econometric tests to determine who really wields power.

This paper compares FOMC decision-making under Burns and Greenspan in an effort to provide a better understanding of the role of the Chairman, especially during the Greenspan era. Much of the discussion is drawn from Chapter 8 in Chappell, McGregor, and Vermilyea (2005). In addition, we will describe a model and an empirical methodology that might, in the future, provide a practical framework for quantitatively assessing Greenspan's power within the Committee.

² Seven of the FOMC's voting members are appointed by the U.S. president to 14-year terms as Governors of the Federal Reserve Board. The remaining five voting slots on the Committee are filled by presidents of regional Federal Reserve Banks (there are 12 regional Reserve Banks, and the presidents rotate in the FOMC's voting positions in a prescribed fashion). Actually, the FOMC Chairman is formally selected by a vote of the Committee each year.

I. Burns and Greenspan: Some Comparisons

In many ways, FOMC operations were similar under Arthur Burns and Alan Greenspan. In both eras, the Committee primarily targeted the federal funds rate, and policy was carried out in a discretionary fashion with an objective of “leaning against the wind.” Both Chairmen played an important role in achieving consensus and crafting policy decisions in the presence of diversity of opinion across members. However, the policymaking environment was not unchanging. There were differences in the economic conditions that prevailed, in the decision-making procedures of the Committee, and in the nature of monetary policymaking operations. These differences affect the attributes of the data we have been able to collect for these years, as well as the questions we can investigate.

As we have noted, one of the striking characteristics of data describing individual preferences in the Greenspan years is the degree of solidarity expressed in support of the Chairman. The excerpt that heads this paper provides a reminder of the considerable support that Greenspan seemed to be able to count on in each meeting. Greenspan regularly spoke first in the FOMC meeting policy go-around, and in almost every meeting, a majority of voters aligned themselves with the position he advocated. Although Greenspan almost always had support from a majority, it was not unusual to observe some diversity of opinion. In subsequent sections, we will investigate whether there is any evidence that Greenspan responded to preferences expressed by members of the Committee, or whether he governed in a more dictatorial manner.

II. Greenspan’s Influence on the Committee

We begin with a brief digression on the data we have assembled. The original source data consisted of transcripts or summaries of statements made by FOMC members in Committee deliberations. From the statements, we recorded either a continuous desired funds rate or a categorical indicator to describe each member’s policy preference over a series of meetings. When members failed to directly state a desired interest rate, preferences were coded into three categories: leans toward tightness, leans toward ease, or assents, each defined in relation to a benchmark funds rate proposal. We then developed methods to impute desired interest rates for those whose preferences were only reported in a categorical form. By combining stated and imputed desired funds rates, we were able to construct complete preference profiles for meetings over the 1987-1996 period.³

³ Details on these procedures are provided in Chappell, McGregor, and Vermilyea (2005).

By examining these preference profiles, we found that the position of the median voting member of the Committee coincided with the position of the Chairman at 72 of 75 meetings in the Greenspan era. In his first meeting in August 1987, Greenspan passively listened as others spoke first. He went along with the majority, but late in the meeting he casually mentioned that he would have preferred slightly different specifications. A few months later, in February 1988, Greenspan again spoke late, failed to state a position with clarity, and was coded with an “assent.” His imputed desired rate in that meeting differed slightly from the median, but there was no direct evidence suggesting that he was unhappy with the outcome. In February 1994, a majority of six Committee members indicated a preference for a 50 basis point increase in the funds rate. Greenspan was in a minority of four who preferred a tightening of only 25 points. In this case, Greenspan appealed for support and his proposal passed without a dissenting vote.⁴

While differences between the Greenspan and median positions were unusual, support for Greenspan was not always unanimous. Of the 1,292 observations of member preferences in meetings, in 984 cases (76.2%) members reported a funds rate identical to that of Greenspan, but this left 308 cases (23.8%) where members differed with Greenspan (or failed to indicate clear agreement with him). In the remainder of this section, we analyze patterns of support for Greenspan within the Committee.

Greenspan usually spoke first and offered a policy proposal in the policy go-around held in each meeting; other members then either voiced agreement or offered an alternative recommendation. To gauge the impact of Greenspan’s proposal on the preferences reported by others, we have estimated reaction functions for individuals on the FOMC. In addition to variables typically included in a monetary policy reaction function, we now add Greenspan’s proposed target rate, denoted *GREENSPAN*, as an explanatory variable.⁵ The size and significance of the Greenspan coefficient should give some indication of his influence over each member.

As we use this approach to investigate Greenspan’s influence, two caveats should be noted. First, Greenspan’s proposed funds rate reflects his reactions to

⁴ Because Cleveland Fed president Lee Hoskins had indicated a willingness to support Greenspan early in the meeting, even though his preference differed, Greenspan’s informal count of the Committee would probably have shown a tie before he made his appeal.

⁵ Our reaction functions included a pre-meeting interest rate, growth of M2 prior to the meeting, and Greenbook forecasts of inflation, unemployment, and the growth rate of real GDP. Again, details are provided in Chappell, McGregor, and Vermilyea (2005).

incoming data, and those data also influence other members of the Committee. While some incoming information is captured by the reaction function's explanatory variables, other variables may have been omitted from the model. Because of this, significance of the Greenspan proposal would not unambiguously indicate that Greenspan influences a member. It may instead indicate that Greenspan and a member respond to the same omitted variables. Second, if Greenspan anticipates members' preferences, his proposals might reflect an assessment of what would be acceptable to the Committee. High correlations between Greenspan's preferences and those of individuals might, in part, be a consequence of reverse causality. In spite of the noted caveats, variations in individuals' *GREENSPAN* coefficients are likely to give some indication of a member's tendency to move in concert with the Chairman, whether it derives from deference or from like-mindedness.

Table 1 provides estimates of the *GREENSPAN* policy coefficients in individuals' augmented reaction functions (the remaining reaction function parameter estimates are not reported). The Committee members listed in the table attended at least 10 meetings in our sample period, and the sample for each individual includes all meetings in which the member was present and Greenspan both spoke first and stated a target rate. Members are arrayed from highest to lowest coefficients, so those who appear to be most responsive to Greenspan are listed at the top of the table. A coefficient of 1.0 implies that a member varies point-for-point with variations in Greenspan's target rate. Two members of the Committee, McDonough and Mullins, agreed with Greenspan whenever he stated a rate. Because the Greenspan variable alone explains all of the variation in their desired rates, we cannot estimate regressions for them, but we have recorded the implied Greenspan coefficients of 1.0 in the table.

For purposes of comparison, we also report an alternative measure of agreement. The Greenspan "agreement frequency" reports the ratio of the number of instances in which a member reports a desired target identical to that of Greenspan to the number of meetings in which the member was present. In principle, the agreement frequency and the reaction function measure different dimensions of similarity with the Chairman. For example, if a member always proposed an interest rate target exactly 25 basis points below the rate proposed by Greenspan, that individual should have an agreement frequency of zero, but a reaction function coefficient of 1.0 (the member never agrees with Greenspan, but always responds to him with point-for-point changes). Although McDonough and Mullins always agreed with Greenspan when he clearly stated a rate, there was one meeting where Greenspan's position was ambiguous. Because of this, their agreement ratios are less than one.

Despite the conceptual difference, Table 1 shows that the agreement frequency and the Greenspan regression coefficient are related empirically. Those with large regression coefficients typically have high agreement frequencies.⁶⁷ The Greenspan regression coefficients range from near zero to just over 1.0, and agreement frequencies range from 0.35 to 0.97. Among the most dependable supporters of the Chairman are the Vice Chairmen, McDonough and Corrigan, and members Mullins, Kelley, Moskow, and LaWare. These individuals have both regression coefficients and agreement frequencies exceeding 0.84. Despite the caveats we noted earlier, agreement of this magnitude almost surely reflects a conscious willingness to follow the Chairman. There are no plausible omitted variables that would explain the precise congruence of the Greenspan and McDonough (or Mullins) positions in 27 (or 29) consecutive meetings. Reverse causality is also implausible, unless one believes that Greenspan was receiving his instructions from McDonough or Mullins (instead of anticipating the consensus of the complete Committee).

The table also distinguishes some notable mavericks. Among the more independent members are Reserve Bank presidents Broadus, Melzer, Black, and Hoskins and Governors Seger and Angell. Seger and Hoskins have agreement frequencies below 0.40 and Greenspan regression coefficients below 0.15.

Overall, the results suggest that agreement was not so automatic that Greenspan could be assured of majority support whenever he offered a proposal. At times, though, especially when dependable supporters Kelley, LaWare, and Mullins served together (July 1990 through December 1993), he would have approached a high level of certainty. With those three members, his own vote, and that of Vice Chairman Corrigan or McDonough, he would need just one more supporter to secure at least a tie.

III. The Committee's Influence on Greenspan

There is a strong presumption that Alan Greenspan is a powerful leader, but he is not likely to be a dictator. The transcripts sometimes show that members fall in line to support the Chairman, but on other occasions diverse views are openly discussed, and the requirement that the Chairman get a majority of the votes is a constraint that he must consider. Evidence reported in the preceding

⁶ San Francisco Fed president Robert Parry is an exception. His regression coefficient of 0.874 indicates that he responds almost point for point to Greenspan positions; however, he frequently favored a tighter posture and agreed with Greenspan only 66.7% of the time.

section supports the proposition that members follow the lead of the Chairman; in this section, we look for evidence of influence in the opposite direction.

Even when Greenspan has a majority supporting his current proposal, the distribution of preferences in the Committee can be skewed and the resulting pressures for future change unbalanced. For example, in December 1993, Greenspan and seven colleagues favored keeping the funds rate target at 3.00%. The four other voting members of the Committee all favored a move to tightness, but Greenspan and the majority prevailed. However, in the next meeting, in February 1994, Greenspan proposed a tightening. That move might have been made independently, but it could also have been a response by the Chairman to Committee pressures for tightness.

In an attempt to characterize the direction and strength of Committee sentiment that might have guided Greenspan, we have constructed several variables measuring differences between Greenspan and the Committee. For each member in each meeting, we first code a variable called *LEAD* (for “leading” Greenspan). We code a member as “leading Greenspan to tightness” (+1) if we can infer that the member prefers, either currently or for the near future, a tighter policy stance than Greenspan. Thus, any member who currently advocates a funds rate higher than the one proposed by Greenspan would be coded as (+1). This coding would apply for directly stated rates, as well as leans that indicate greater tightness than Greenspan. In addition, we code members as leading Greenspan to tightness if they agree with Greenspan on the current target but advocate a bias toward tightness when he does not. We would code members as “leading Greenspan to ease” (-1) in analogous situations where the direction of preference is reversed. Finally, members who either agree with Greenspan completely, or whose differences are unclear, receive a *LEAD* coding of zero.

Once we measure *LEAD* for each individual, we can construct a summary measure of the Committee’s leading tendency. To do so, we first determine who will be voting in the upcoming Committee meeting, meeting t . For those members who also attended meeting $t-1$, we calculate their value for *LEAD* based on meeting $t-1$ preferences, as described above. We then sum *LEAD* values across those members, and express the sum as a ratio of the number of members comprising the sum. This ratio, *LEADR*, provides a measure reflecting the balance of pressure on Greenspan to alter policy. We have also used a variant of this variable that is defined by summing *LEAD* values over the three previous FOMC meetings. The latter variable is denoted *LEADR3*.

Possible influence of Committee preferences on Greenspan's proposal is investigated in two ways. We first test whether *LEADR* (or *LEADR3*) has an influence on the rate proposed by Greenspan for the current meeting. We then test whether these variables affect discretionary moves made by Greenspan in the subsequent inter-meeting period. For the first test, we specify a reaction function for Greenspan, using the funds rate proposal he advocated in each meeting as the dependent variable and including the same explanatory variables we have used before. We augment that equation with *LEADR* or *LEADR3* to measure the pressure from the Committee on Greenspan. The results of the estimation are presented in Table 2. The results show no evidence that members' differences with Greenspan in previous meetings have any impact on Greenspan's current proposals. In each estimation, the relevant coefficient is neither correctly signed nor does it differ significantly from zero. Results are unchanged when *LEADR* and *LEADR3* are redefined to include all FOMC members, instead of only voting members (results of the latter exercise are not reported).

For the second test, we examine the behavior of the funds rate over the post-meeting period rather than the target adopted in the meeting. Our indicator of the post-meeting interest rate is the recorded "status quo" funds rate for the subsequent meeting, i.e., the rate prevailing after all inter-meeting policy shifts. Greenspan often exercised discretion in making inter-meeting policy shifts, but these shifts may have been responsive to the tone and content of the remarks made by others. We specify that the post-meeting interest rate is a function of the adopted target rate, a discrete variable indicating the adopted bias (+1 for asymmetric toward tightness, -1 for asymmetric toward ease, and 0 for symmetric), and the *LEADR* ratio based on the current meeting's preferences. Results in Table 2 again show no impact of Committee preferences on subsequent Greenspan actions; the relevant coefficients fail to differ significantly from zero.

While members' leading preferences have no notable effects on future policies, the results do confirm that the bias associated with the directive is a meaningful predictor. The dummy indicating the state of the bias is significant (at the 0.01 level) in each of the equations explaining inter-meeting rate moves. This confirms earlier findings by Lapp and Pearce (2000).

As we have noted, our inability to detect a relationship between the leading preferences of Committee members and subsequent Greenspan actions does not imply that members have no influence on Greenspan. However, if the Committee exerts influence, it seems likely that the influence comes via pre-meeting negotiation or through Greenspan's ability to divine Committee sentiments in the absence of overt signals.

IV. Sources of Greenspan's Influence

For reasons we have described, it is difficult to estimate Greenspan's share of the power in FOMC decision-making. However, circumstantial evidence supports the view that he has considerable influence. In almost every meeting in our sample, Greenspan spoke first, offered a proposal, and defended it. Other Committee members followed him and offered support or suggested differences, but Greenspan's original proposal regularly won. In this section, we investigate anecdotal data from the FOMC transcripts to explore the ways in which Greenspan was able to exert influence over the FOMC. We frequently adopt a comparative perspective, focusing attention on differences between the Burns and Greenspan eras in terms of Committee decision-making procedures, operational differences in monetary policymaking, the behavior of the Chairman, and the Committee's external environment.

IV.A. Taking Charge

When Arthur Burns chaired the FOMC, he sometimes spoke early in meetings and he sometimes waited and spoke after everyone else. His behavior on this matter changed as time passed. Early in his tenure, he tended to speak at the conclusion of a meeting and craft a consensus; late in his tenure he more frequently spoke first and defined the terms of discussion. It should not be surprising that a new Chairman would exercise caution early in his term. The formal leadership authority granted the Chairman is rather limited and derives more from tradition than statute. A newcomer to the position might gain power in the long term by showing deference to more senior members upon his arrival.

In his first meeting, in August 1987, Greenspan also deferred to the Committee, permitting others to speak before he did. When he did speak, he offered a slightly different preference than that espoused by the majority (a borrowing target of \$600 million rather than \$525 million), but willingly proposed the majority position for a vote. Prior to voting, he asked for advice about how to handle preference aggregation, posing this question:

I don't know what the convention is here—whether you average these things [members' preferred borrowing targets], which you can, or whether you take the majority. What has been the convention? [*FOMC Transcripts*, August 18, 1987, p. 36]

Vice Chairman Corrigan advised the Chairman against averaging, implying that the majority ruled. He then gave Greenspan a brief lesson on the role of the Chairman:

I think it is hard to average it. One other thing that is done in terms of trying to sense where the critical mass is, if I could put it that way, or where the Committee might stand, is that the Chairman has been known from time to time to ask people what their preferences are as opposed to what they could live with. In this particular case, you may have some shadings of opinion around those borrowing numbers, for example, based on the question of symmetry or tilt that would go with them—in other words, the “woulds” and the “mights.” I, myself, certainly would not dissent, at this meeting, over the difference between \$600 million and \$500 million in the context in which there was some tilt along the lines that Governor Johnson has suggested. So, you do have some play; but I don’t think that most members of the Committee would be comfortable with averaging the borrowings. I think that can get to be quite awkward when there are larger differences, as there may be, than the difference between \$500 million and \$600 million. [*FOMC Transcripts*, August 18, 1987, p. 36]

Corrigan’s assessment that the median rather than the mean position was the relevant indicator of Committee sentiment appears to have been an accurate one for the Greenspan years. Greenspan and median positions were generally congruent and were also identical to the adopted target. In contrast, the mean position was often different, but when it was, it never prevailed as the Committee choice.

In his second meeting, Greenspan was again cautious, but he did speak first and offer a proposal, while again showing deference to the Committee. Referring to the discussion of economic conditions that preceded the policy go-around, he firmly placed himself with the Committee: “I find myself probably about in the middle of much of what I have been listening to” [*FOMC Transcripts*, September 22, 1987, p. 33]. He then diplomatically noted that this left him inclined to make no change in policy:⁸

⁸ Note also that Greenspan now refers to \$600 million as the status quo borrowing target. At the preceding meeting, Greenspan had preferred \$600 million, but the Committee choice had been \$525 million. How the Greenspan position came to be the status quo by the second meeting is not

Consequently, as far as policy is concerned, where we are at the moment strikes me as quite appropriate to the outlook. I don't feel terribly strongly about it, but I would be inclined to start off merely by assuming that we stay at "B," and that we stay with the \$600 million on the borrowing requirement ... I don't know where that will fit me in the rest of this group, but I'd love to hear. [*FOMC Transcripts*, September 22, 1987, p. 34]

By Greenspan's third meeting, in November 1987, external events had played a role in changing how he managed the Committee. Two weeks earlier, the stock market had crashed and the Dow Jones Industrial Average had plunged 508 points (22.6%) in a single day. In the inter-meeting period, the FOMC had responded by permitting extensive discount window borrowing, by de-emphasizing the borrowing target in favor of a funds rate target, and by permitting that target rate to fall by about 50 basis points. It seems clear that these events played a role in elevating Greenspan's status in the Committee. The Fed was widely praised for its actions in the wake of the crash, and Greenspan received much of the credit for the Fed's success in this incident. In the first regular FOMC meeting after the crash, Greenspan spoke first and at some length, and appeared to be more assertive. With one exception, he always spoke first in subsequent meetings and offered a clear proposal that the Committee would ultimately adopt.

IV.B. Intellectual Leadership and the Fruits of Success

Arthur Burns was known as an intellectual and as an expert on business cycles, and by all accounts he was endowed with a strong personality. However, Alan Greenspan may have used both his intellectual leadership and his management skills to greater advantage than Burns did. Once Greenspan exerted his leadership, he tended to dominate Committee discussions in two ways. First, he exhibited an extraordinary knowledge of the details of macroeconomic data; second, he was not inclined to be brief. These remarks from July 1996, discussing the puzzling absence of inflationary pressures in a period of tight labor market conditions, are illustrative:

We obviously are viewing an economy that at the moment does not resemble most of our textbook models. The unemployment rate is low and has remained low for quite a while. Anecdotal evidence continues to indicate tight labor markets, but with little evidence of significant wage acceleration. We also have

addressed in the transcripts, but the result suggests that Greenspan had quickly learned how to exert influence over Committee choices.

a strong economic expansion under way, with industrial commodity prices falling even excluding the plunge in copper prices. Broader measures of price inflation are, if anything, still declining. There are, however, two disturbing numbers that suggest the old model may be operative. The first, of course, is the very disturbing ECI wage and salary figure for the first quarter. The second is the recent fairly significant rise in delayed deliveries in the June NAPM report. Most other data, however, are not supportive of a rising inflation trend. To be sure, average hourly earnings have been rising at a fairly pronounced pace in the last two or three years. But as we discussed yesterday, that series shows very little change when we look at the conversion by the BLS to a chain-weighted basis. Indeed, in the 12 months ended in May, it was up 2.9 percent versus 3.4 percent for the published average hourly earnings. The CPI is becoming increasingly obsolete, as I explained yesterday. The more analytically accurate core PCE chain-weighted price index is increasing now at a rate of about 2 percent, as is the core gross domestic purchases chain-weighted price index, with the increase in both measures declining since 1995. The hypothesis that the inflation rate has stabilized is very difficult to sustain with this data system. [*FOMC Transcripts*, July 2-3, 1996, pp. 82-83]

The previous excerpt is typical in revealing Greenspan's immersion in the nuances of macroeconomic data sources. The fact that it accounts for less than a fifth of the text of his opening statement gives an indication of his ability to dominate through willpower, as well as intellectual ascendancy. In fact, over the 1987-1996 period, Greenspan's remarks came to take up a larger and larger portion of the time spent on the monetary policy go-around. Figure 1 illustrates this by plotting the percentage of the text in the policy go-around deliberations that was attributed to Greenspan's opening statement.⁹ In 1987, his opening statement accounted for about 12% of the discussion, but from 1990 on, he accounted for at least 25% of the total. In 1994-1996, Greenspan's opening statement averaged nearly 40% of the policy go-around. In addition to his opening statement, Greenspan typically made additional comments during policy deliberations, often responding directly when a Committee member stated an

⁹ The figures are based on computational word counts for all meetings except those from March 1993 through February 1994. For these latter meetings, the fraction is approximated by page counts, with fractional pages based on visual assessments. Meetings at which Greenspan did not speak first (August 1987 and February 1988) are excluded from these calculations.

opposing view. By doing so, he may have altered the flow of debate in a manner that enhanced his influence over the policy outcome.

Although Greenspan did not have an academic reputation to rival that of Burns or of some of his colleagues on the Committee, he is frequently credited with having an uncanny ability to interpret economic conditions correctly (e.g., Woodward 2000). In the 1990s, he staked out controversial positions on several occasions. In 1994, he advocated a “pre-emptive” tightening of policy to avoid rekindling inflation. In 1995 and 1996, he resisted tightening moves, arguing that the absence of inflationary pressure in a period of tight labor markets reflected an absence of wage pressure due to the insecurity of workers (who had been subjected to downsizing as corporations attempted to slash costs) and a trend toward higher productivity growth driven by gains in information technology. In both of these cases, as well as in the aftermath of the stock market crash, he seems to have made the correct calls. For whatever reason, his policies were successful, and his successes gained him support within the Committee, as illustrated by Governor Lawrence Lindsey’s comments in September 1996:

Having said that, Mr. Chairman, I believe that what you are proposing is more reflective of what I would call an entrepreneurial, hands-on approach. I think it is built frankly out of self-confidence and nimbleness, and you have earned the capacity to have self-confidence and to be a little more nimble in the conduct of policy. *I will be supporting your recommendation based on what I think is a very well-earned reputation of success.* [FOMC Transcripts, September 24, 1996, p. 38, emphasis added]

IV.C. Discreteness of Policy Options

Although the federal funds rate was targeted under both Burns and Greenspan, in the Greenspan era policy choices evolved into increasingly “discrete” options. In the 1970s, policy options were generally framed as ranges, and the funds rate fluctuated within the adopted range in the post-meeting period. As the FOMC moved to more explicit funds rate targeting under Greenspan, the targets themselves were usually single-valued. Movements in the target were almost always in 25 or 50 basis point increments relative to the status quo. Within meetings, members reported preferences similarly, usually favoring one of these well-defined alternatives. The presence of well-defined discrete alternatives may account for differences in some characteristics of the data sets that we have constructed for the Burns and Greenspan eras. In particular, we observe individuals’ directly stated interest rate targets more frequently in the Greenspan

years than in the Burns years because members found it straightforward to choose from a set of well-defined alternatives. It is also possible that the increasing discreteness of policy options affected the balance of power between the Chairman and the Committee.

One consequence of having a small set of discrete policy options is that disagreements become more obvious. Once Greenspan stated a preferred rate, each succeeding speaker either agreed with that rate or advocated an alternative. If a member failed to completely agree, he had disagreed. In contrast, in the Burns years, if the Chairman advocated a range of funds rates, and if another member advocated a range that was identical except that one endpoint of the range was slightly perturbed, there was little sense of disagreement. The Chairman would have the flexibility to move within ranges that were overlapping anyway, so ranges that were similar could be seen as being supportive of the Chairman. Given this perception, Burns era members probably felt less pressure to align themselves precisely with the Chairman.

Another consequence of the move toward single-valued targets is that a more prominent distinction arose between policy shifts adopted within a meeting and those adopted at the discretion of the Chairman between meetings. In the Burns years, it was normal for rates to fluctuate somewhat within the adopted range as the Chairman and the account manager implemented policy between meetings. Inter-meeting movements in funds rates were the norm rather than the exception, and the notion that an inter-meeting “policy move” was distinct from the policy adopted at the meeting was not always recognized. However, as funds rate options became more discrete and more tightly targeted in the Greenspan years, any movement was interpreted as a shift of policy. The discretion delegated to the Chairman for making inter-meeting policy moves was a matter of frequent FOMC discussion in the Greenspan years.

It is difficult to determine the overall impact of the increasing discreteness of policy options on the power of the Chairman. It probably did increase the tendency of members to align themselves with the Chairman’s choice, and this may have added to his influence. However, the implicit restrictions applied to inter-meeting policy moves may have reduced the Chairman’s power. It was less important for Burns to always “win” on the specification of policy in the directive because that specification did not constrain him as tightly in the upcoming inter-meeting period.

IV.D. The Bias and Consensus

From 1983 to 1999, a period that encompasses the Greenspan years included in our sample, the FOMC included a statement of “bias” with each of its adopted policy directives. The bias was intended to give an indication of likely future policy moves, although the precise interpretation was sometimes unclear. Our analysis in section III showed that the bias had real predictive content for inter-meeting shifts in the federal funds rate; i.e., it is an important aspect of the decision made at an FOMC meeting. However, Thornton and Wheelock (2000) have argued that the bias has also served as a device for orchestrating consensus. By properly framing the bias to associate with a particular funds rate target, the Chairman might be able to assemble a more inclusive coalition than would have been possible otherwise. For example, in the last half of 1996, the FOMC held the funds rate steady at 5.25%. Several voting members advocated moves toward tightness during this period, and the Committee maintained a bias toward tightening. However, the tightening never occurred—Greenspan was able to maintain a steady funds rate in the presence of at least fringe opposition, with only two dissents recorded in the final five meetings of the year. The setting of the bias to tightness may have discouraged those who would otherwise have dissented.

IV.E. The Committee and the Chairman: Inside Views

Committee discussions sometimes directly addressed the issue of the roles of the Chairman and the Committee. In July 1992, Lindsey left little doubt that Greenspan’s preferences received added weight simply because he was the Chairman:

Mr. Chairman, I very much appreciate your efforts to find a consensus. What has struck me about the challenge to the independence of the Federal Reserve is a need for us to speak with one voice as much as possible. Frankly, I find myself torn between your recommendation, which I will support, and President Jordan’s recommendation, which I also could support were he Chairman! [*FOMC Transcripts*, June 30-July 1, 1992, pp. 73-74]

However, Committee members do not simply see the Chairman as a dictator and themselves as ineffective bystanders, and on occasion the power of the majority was apparent. In November 1992, Governor Wayne Angell questioned Greenspan’s informal tally of preferences on the setting of the bias. A lengthy discussion and an additional straw poll were required before the issue was decided

by Greenspan's tie-breaking vote [*FOMC Transcripts*, November 17, 1992, pp. 46-47]:

CHAIRMAN GREENSPAN. ... Listening to the comments on the short term, especially if we [include] the three members of the Committee who are significantly desirous of easing now, it's fairly clear that we have a central tendency toward asymmetry ... as I read it we would be close [to] the average [view] of this Committee if we voted "B" asymmetric toward ease, and I would propose that to the Committee.

MR. ANGELL. How do we make it soft asymmetric? I counted six who preferred symmetric and then you said either way.

CHAIRMAN GREENSPAN. No, that's not the way I got it.

MR. ANGELL. I've got Corrigan—

CHAIRMAN GREENSPAN. Corrigan is either way.

MR. ANGELL. He said symmetric but he could accept.

VICE CHAIRMAN CORRIGAN. I would accept asymmetric because of my concern about the international side.

MR. ANGELL. Right, you said symmetric but could accept asymmetric.

MR. KELLEY. You might take a poll.

CHAIRMAN GREENSPAN. That's the simple way. Why don't we just poll the members?

Further, it seems clear that Greenspan valued consensus enough to avoid heavy-handedness, especially when his preferences were not strongly felt. In July 1992, he clearly indicated that his proposal was intended to reflect his expectation of the consensus view of the Committee:

I conclude by saying that, after listening to the general views regarding what this Committee is concerned about and adding up the number of people on the Committee who have taken different views, I am led, as I try to find the central tendency, to [propose] a mildly asymmetric directive toward ease but with the requirement that before any action is taken there be a telephone conference to explain why. I'm not sure that captures everybody; I suspect it probably does not. But having thought about trying to find where the central tendency is—where one captures the largest number of views and concerns of this Committee—that's pretty much where I come out. [*FOMC Transcripts*, June 30-July 1, 1992, p. 67]

On other occasions, Greenspan made efforts to build inclusive coalitions in support of his positions. Woodward (2000), for example, reports that Greenspan successfully lobbied Governor Alan Blinder for support several days before proposing a pre-emptive 50 basis point rate hike in August 1994. Blinder agreed to support Greenspan's proposed tightening, but on the condition that it be accompanied by an announcement that no additional tightening moves were anticipated. Greenspan agreed—the rate was hiked, the announcement was made, and both Blinder and Greenspan had made an impact.¹⁰

Pre-meeting negotiations were apparently not always necessary for members to communicate their preferences to Greenspan. Even though he spoke first in the policy go-around, the Chairman may have been able to infer members' views in part from statements that they made in earlier stages of the meeting in which economic conditions were discussed. Over time, Greenspan eventually learned enough about individuals' views to confidently predict them without consultation. In May 1993, he remarked:

Well, let me put it this way. I've been around this Committee for a number of years and I think I can say that I pretty much know how every single member of this committee would come out under [any given hypothetical] event. In other words, I could take the vote myself if I had to and I bet I'd get it on the nose three times out of four. The reason for that is that I know where you're all coming from. [*FOMC Transcripts*, May 18, 1993, p. 54]

Greenspan may have been an enthusiastic majoritarian or consensus builder when members agreed with him, but he was willing to push hard to overcome opposition when he had strong preferences. In February 1994, Greenspan was in a minority of four members who favored a 25 basis point tightening. Six members preferred a larger 50 basis point movement. Greenspan made a compelling appeal for support and unity, which was followed by a unanimous vote in his favor:

Let me make the suggestion then that we move 25 basis points with symmetry, that we watch this process very closely, and that if the evidence suggests that this situation is not simmering down, that we have a telephone conference at the appropriate time ... so I would request that. I don't often request that we try to stay together

¹⁰ This sort of negotiation may have been less common in the Burns years. In an interview, Jeffrey Bucher, a Governor during the Burns era, noted that Burns adhered to a “no-lobbying rule” and did not attempt to influence members prior to meetings.

... I would request that, if we can, we act unanimously. It is a very potent message out in the various communities with which we deal if we stand together. If we are going to get a split in the vote, I think it will create a problem for us, and I don't know how it will play out. I rarely ask this, as you know. This is one of those times when we really are together and I'd hate to have our vote somehow imply something other than the agreement for a tightening move that in fact exists in this Committee. [*FOMC Transcripts*, February 3-4, 1994, p. 57]

V. Future Research Possibilities

As we have noted, it is common to interpret the Greenspan era stylized facts as evidence of his dictatorial power. Greenspan speaks first with a proposal, members follow and agree, and the Chairman's proposal wins. Thus, the Chairman appears to rule dictatorially. However, the logic of this interpretation is not convincing, and the conclusion is likely to be incorrect. The FOMC transcripts clearly suggest that the Chairman is sensitive to the opinions of other members of the Committee.

Consider an alternative to the dictatorial power hypothesis, which we refer to as "Chairman-Led Consensus." In this view, each Committee member would like to see the Committee adopt his or her own most preferred funds rate, but members also value the achievement of consensus. Further, each member understands that decisions must reflect the preferences of all members, with the Chairman accorded more weight than others. In formulating a proposal for consideration, the Chairman, in advance, gives weight to his perception of the views of other Committee members, which he can forecast accurately. Moreover, an implicit agreement exists under which members follow the proposal of the Chairman, so long as their personal preferences are not extremely divergent, and so long as they perceive that the Chairman has indeed reflected the views of the Committee in his proposal. Thus, if a member's preferred funds rate differs from that of the Chairman by a sufficiently small amount, the member will simply report "agreement" with the Chairman in the policy go-around (and formally offer an "assenting" vote).

The Chairman-Led Consensus model suggests that power is shared between the Chairman and the Committee. It also suggests that stated preferences overstate the degree of agreement within the Committee and that simply mapping stated preferences into outcomes could be misleading in terms of assessing the balance of power between the Chairman and other members of the Committee.

However, the Chairman-Led Consensus model does have testable implications that might empirically distinguish it from the “Chairman as Dictator” model. For example, if the composition of the Committee were to change, this should be reflected by a shift in the consensus outcome, but it would not change the outcome if the Chairman were a dictator.¹¹ In this section, we will propose an empirically estimable model that could be used to test the Chairman-Led Consensus hypothesis; this model will include the Chairman as Dictator hypothesis as a special case in which the voting weight of rank-and-file Committee members is zero.

The empirical model supposes that the Chairman’s proposal in meeting t , R_{P_t} , is a weighted average of his preferred policy, R_{C_t} , and his expectation of the median Committee preference prior to the meeting’s policy go-around, $R_{M_t}^e$:¹²

$$R_{P_t} = I R_{C_t} + (1 - I) R_{M_t}^e. \quad (1)$$

The Chairman’s proposed rate, R_{P_t} , is observed (it is reported as Greenspan’s recommendation in the meeting transcripts), but neither R_{C_t} nor $R_{M_t}^e$ is directly observable. We can, however, assume that the Chairman’s personal desired rate, R_{C_t} , is determined by his policy reaction function:

$$R_{C_t} = \mathbf{X}_t \mathbf{B}_C + e_t, \quad (2)$$

where \mathbf{X}_t is a vector of variables reflecting current or forecasted economic conditions, and \mathbf{B}_C is a vector of coefficients. Substituting (2) into (1) yields

$$R_{P_t} = I (\mathbf{X}_t \mathbf{B}_C) + (1 - I) R_{M_t}^e + e_t. \quad (3)$$

If we could construct a measure of $R_{M_t}^e$, the Chairman’s expectation of the Committee median, then equation (3) would be estimable. We next consider how this might be done.

¹¹ Keech and Morris (1997), Morris (2000), and Chang (2003) also describe models of monetary policymaking that emphasize the importance of the composition of the Committee.

¹² We can also investigate other measures of the central tendency of the Committee. For example, the mean of members’ targets might be more appropriate than the median. However, there are some indications in the transcripts that would support use of the median over the mean.

To measure R_{Mt}^e , we propose to construct a measure of the expected desired funds rate for each member of the Committee and then to find the median of those desired rates.¹³ In our previous work (Chappell, McGregor, and Vermilyea 2004, 2005), we have described how data from meeting transcripts can be used to estimate policy reaction functions for individual FOMC members.¹⁴ For the current exercise, we plan to use similar methods to estimate reaction functions for all Greenspan-era Committee members.¹⁵ Once we have estimated reaction functions for all Committee members, we can use the estimated parameters to forecast members' "expected" desired funds rate targets conditional on information available prior to the policy go-around.¹⁶

To more accurately proxy the Chairman's expectation of members' rate preferences by this method, we are undertaking an extensive data collection effort. Although conventional reaction functions (in which desired policy settings are a function of readily observable macroeconomic indicators) can be used in forecasting member preferences for an upcoming policy go-around, other sources of information are available and could be used to augment the reaction function specification. Transcripts from the previous FOMC meeting may suggest that a member might wish to "lead" the Chairman in a particular direction. For example, it is not unusual for a member to suggest that while no change in the rate is appropriate today, the member expects that the next move might be in an upward (downward) direction. We will use the transcripts to code a variable that indicates

¹³ Although the expected Committee median rate and the median of members' expected rates conceptually differ, this is not likely to be an important empirical matter.

¹⁴ Using the FOMC transcripts, we were usually able to record member preferences directly from the stated policy preferences attributed to members in the textual record. When members' recommendations were not directly framed in terms of preferred rates, we instead coded qualitative indicators of preferences. Using both continuous and discrete preference indicators, we estimated individual policy reaction functions using a hybrid OLS-ordered probit estimation method.

¹⁵ We plan one important modification to our previous reaction function estimation method. Given our earlier discussion, we will assume that when a member voices agreement with Greenspan in the policy go-around, this is an indication that the member's true preference differs from Greenspan by less than a small amount (the implied threshold parameter will be estimated) rather than an indication that the member's preferred target is strictly identical to that of the Chairman. This does require an alteration of the estimation procedures we have used before.

¹⁶ Some practical issues will be resolved as we proceed in this task. Ideally, rolling regressions should be used in estimation. That is, at meeting t , the Chairman has only observed a member's past history of policy preferences with data available up to that point, and his forecast at the beginning of that meeting should not be based on estimates that use data available after that point. Also, in some cases, members' records do not provide sufficient numbers of observations to permit estimation of an individual reaction function. For such individuals, estimates obtained from data pooled over others could be used. Precise reaction function specifications might also need to vary across members.

a preference in a preceding meeting to lead the Chairman toward higher, lower, or unchanged rates in subsequent meetings.

A second source of information available to the Chairman comes from the discussion of economic conditions that precedes the policy go-around in each FOMC meeting. Although the discussion of economic conditions and the discussion of policy recommendations are formally separated in the proceedings, in the Greenspan era members sometimes describe their policy preferences in the midst of the discussion of conditions. By doing so, they communicate their own preference before the Chairman offers a proposal.¹⁷ Sometimes these statements directly indicate a desired interest rate, which we can observe by reading transcripts. In such cases, we may be able to directly code the preferred rates that the Chairman should attribute to members prior to the policy go-around (without forecasting via a reaction function).

In cases where members do not directly state preferred rates in the economic conditions discussion, they may provide qualitative indications of their preferences. Like the information obtained from transcripts of prior meetings, this information can be coded as a categorical variable that could be added to an individual reaction function and used in the calculation of expected desired rates. Coding these preference indicators will require a complete reading of the economic conditions discussion in each FOMC meeting.

Once we have constructed a measure of R_{Mt}^e , equation (1) can be estimated. In principle, the weights of the Chairman (I) and the Committee ($1-I$) can be obtained from this estimation. In practice, R_{Mt}^e will be subject to measurement error because the Chairman has different (and better) information about Committee member preferences than researchers do. The most likely consequence of this measurement error would be to produce a downward bias in the coefficient of the expected Committee median. However, significance of that coefficient would still be sufficient to reject the Chairman as Dictator model in favor of the Chairman-Led Consensus model. This is a key test we wish to perform.¹⁸

¹⁷ Several individuals who have attended FOMC meetings (including a former Governor) have suggested that this portion of the meeting—that is, the discussion of economic conditions—might be an important source of information describing individuals' policy preferences. They have suggested that members speak more freely in this stage before closing ranks in the policy go-around. In contrast, in the Burns era, the Chairman frequently asked members not to state policy preferences in the portion of the meeting intended for discussion of economic conditions. Burns also avoided the pre-meeting lobbying that Meyer (2004) describes for the Greenspan era.

¹⁸ It is also possible that pre-meeting interactions between Greenspan and Committee members would produce another source of bias. If Greenspan successfully lobbies prior to the meeting, then

Conclusions

In the Greenspan era, the position of the Chairman and the median voter on the FOMC almost always coincided. Because of this, a statistical decomposition of the power shares of the Chairman and the rest of the Committee was not feasible. However, indirect evidence does support the hypothesis that Greenspan was powerful. Econometric estimates show that Committee members were responsive to the positions advocated by the Chairman, even after controlling for macroeconomic conditions. There was little evidence of influence in the reverse direction; leading measures of Committee sentiments did not affect proposals made by Greenspan.

Greenspan initially gained influence by successfully managing policy in a critical period following the 1987 stock market crash. His reputation was further enhanced by a series of good (or fortuitous) decisions that resulted in a prolonged period of growth with declining inflation. His successes earned him respect and support from his colleagues and, as his time on the Committee accumulated, he increasingly dominated FOMC deliberations both through intellectual leadership and skillful management of deliberations.

Several changes in Committee procedures may also have increased the power of the Chairman. First, in the Greenspan era, policy options became more discrete, and this, in turn, made disagreements more noticeable. To avoid the appearance of conflict, Committee members were led to coalesce on the Chairman's position. Second, Greenspan inherited the Volcker regime's practice of including a statement of "bias" in monetary policy directives. By skillfully crafting the bias associated with a funds rate proposal, Greenspan may have been able to maintain consensus while pursuing his preferred policy options.

We have proposed a model of "Chairman-Led Consensus" for FOMC decision-making, and we have described ways in which empirical evidence might be used to distinguish it from other theories (most prominently, the "Chairman as Dictator" hypothesis). Implementing this test is left for future work.

the statements we code to characterize member preferences from the economic conditions discussion might already reflect Greenspan's influence. This suggests that a conservative approach to testing for influence of the Committee would require that we *not* use data from the economic conditions discussion in the imputation of preferences. We plan to replicate all tests for Committee influence for cases where we do and do not use such information.

References

- Alesina, Alberto, and Jeffrey Sachs. 1988. Political Parties and the Business Cycle in the United States, 1948-1984. *Journal of Money, Credit, and Banking* 20: 63-82.
- Beck, Nathaniel. 1982. Presidential Influence on the Federal Reserve in the 1970's. *American Journal of Political Science* 26: 415-445.
- Beck, Nathaniel. 1984. Domestic Political Sources of American Monetary Policy: 1955-1982. *Journal of Politics* 46: 786-817.
- Beck, Nathaniel. 1987. Elections and the Fed: Is There a Political Monetary Cycle? *American Journal of Political Science* 31: 194-216.
- Chang, Kelly H. 2003. *Appointing Central Bankers: The Politics of Monetary Policy in the United States and the European Monetary Union*. New York, NY: Cambridge University Press.
- Chappell, Henry W. Jr., and William Keech. 1986. Party Differences in Macroeconomic Policies and Outcomes. *American Economic Association Papers and Proceedings* 76: 71-74.
- Chappell, Henry W. Jr., and William Keech. 1988. The Unemployment Consequences of Partisan Monetary Policies. *Southern Economic Journal* 55: 107-122.
- Chappell, Henry W. Jr., Rob Roy McGregor, and Todd Vermilyea. 2004. Majority Rule, Consensus Building, and the Power of the Chairman: Arthur Burns and the FOMC. *Journal of Money, Credit, and Banking* 36: 407-422.
- Chappell, Henry W. Jr., Rob Roy McGregor, and Todd Vermilyea. 2005. *Committee Decisions on Monetary Policy: Evidence from Historical Records of the Federal Open Market Committee*. Cambridge, MA: The MIT Press.
- Grier, Kevin. 1987. Presidential Elections and Federal Reserve Policy: An Empirical Test. *Southern Economic Journal* 54: 475-486.
- Grier, Kevin. 1989. On the Existence of a Political Monetary Cycle. *American Journal of Political Science* 33: 376-389.

Keech, William R., and Irwin L. Morris. 1997. Appointments, Presidential Power, and the Federal Reserve. *Journal of Macroeconomics* 19: 253-267.

Lapp, John S., and Douglas K. Pearce. 2000. Does a Bias in FOMC Policy Directives Help Predict Intermeeting Policy Changes? *Journal of Money, Credit, and Banking* 32: 435-441.

McGregor, Rob Roy. 1996. FOMC Voting Behavior and Electoral Cycles: Partisan Ideology and Partisan Loyalty. *Economics and Politics* 8: 17-32.

Meyer, Laurence H. 2004. *A Term at the Fed: An Insider's View*. New York, NY: Harper Business.

Morris, Irwin. 2000. *Congress, the President, and the Federal Reserve: The Politics of American Monetary Policymaking*. Ann Arbor, MI: University of Michigan Press.

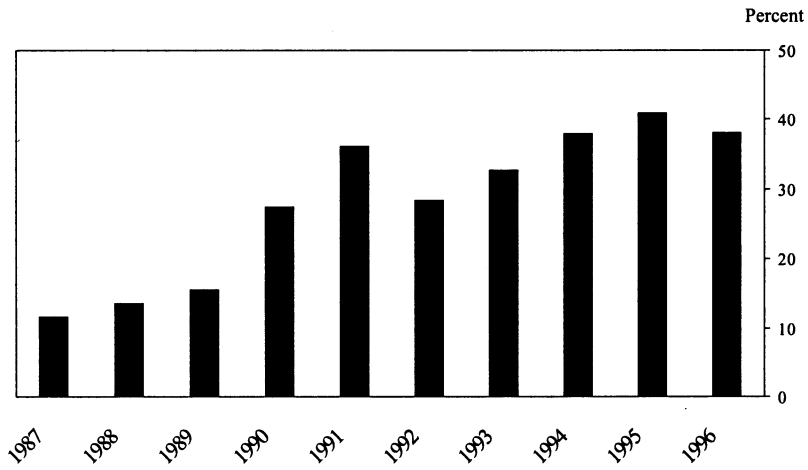
Nordhaus, William D. 1975. The Political Business Cycle. *Review of Economic Studies* 42: 169-190.

Thornton, Daniel L., and David C. Wheelock. 2000. A History of the Asymmetric Policy Directive. Federal Reserve Bank of St. Louis *Review* 82 (September/October): 1-16.

Woodward, Bob. 2000. *Maestro: Greenspan's Fed and the American Boom*. New York, NY: Simon and Schuster.

Figure 1

Average Length of Chairman Greenspan's Opening Comments in the Policy Go-Around



(Source: *FOMC Transcripts*)

Table 1 Responsiveness to Greenspan

Member	Greenspan Coefficient	Agreement Frequency	<i>N</i>
Forrestal	1.025 **	0.800	63
Corrigan	1.007 **	0.891	44
McDonough	1.000 NA	0.964	27
Mullins	1.000 NA	0.966	29
Jordan	0.997 **	0.632	38
McTeer	0.988 **	0.872	47
Kelley	0.968 **	0.919	72
Lindsey	0.968 **	0.780	41
Phillips	0.957 **	0.805	41
Johnson	0.930 **	0.773	20
Moskow	0.881 **	0.895	19
Parry	0.874 **	0.667	73
Boykin	0.864 **	0.704	25
Stern	0.854 **	0.827	73
LaWare	0.847 **	0.925	53
Boehne	0.813 **	0.849	71
Keehn	0.757 **	0.818	53
Hoenig	0.756 **	0.651	43
Syron	0.689 *	0.805	41
Blinder	0.683	0.692	13
Heller	0.665	0.429	12
Minehan	0.636 *	0.609	23
Yellen	0.621	0.750	20
Broaddus	0.614 **	0.545	33
Melzer	0.580 **	0.640	73
Angell	0.523 **	0.784	49
Black	0.479 **	0.718	37
Guffey	0.407	0.719	30
Seger	0.125 **	0.357	26
Hoskins	0.014	0.367	29

*Significant at the 0.05 level, two-tailed test.

**Significant at the 0.01 level, two-tailed test.

NA: Regression could not be estimated because member and Greenspan targets were identical over the available sample.

Table 2 Leading Greenspan

	<i>Greenspan R</i>	<i>Greenspan R</i>	<i>Post-Meeting R</i>	<i>Post-Meeting R</i>
<i>Constant</i>	0.681 (0.060)	0.626 (0.099)	-0.042 (0.573)	-0.050 (0.479)
R_{SQ}	0.943 ** (0.000)	0.950 ** (0.000)		
$\dot{M}2$	-0.012 (0.113)	-0.013 (0.109)		
\hat{U}	-0.106 * (0.033)	-0.097 (0.059)		
\hat{P}	0.074 (0.141)	0.060 (0.251)		
\hat{Y}	0.056 ** (0.002)	0.057 ** (0.003)		
<i>Adopted R</i>			1.003 ** (0.000)	1.005 ** (0.000)
<i>BIAS</i>			0.180 ** (0.000)	0.167 ** (0.000)
<i>LEADR</i>	-0.110 (0.185)		-0.018 (0.857)	
<i>LEADR3</i>		-0.015 (0.753)		-0.011 (0.822)
\bar{R}^2	0.994	0.994	0.990	0.992

Note: *p*-values in parentheses.

*Significant at the 0.05 level, two-tailed test.

**Significant at the 0.01 level, two-tailed test.