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2 Leaning Into the Wind or Ducking out of the Storm? U.S. Monetary Policy in the 1980s

James E. Alt

2.1 Introduction

American monetary policy in the 1980s contained two experiments separating periods of normality. Debates continue about the exact purpose, nature, and duration of these episodes. The first one, which began in late 1979, involved at least a technical change in the procedure used by the Federal Reserve (the body charged with managing the nation's money) to control money growth.[1] Its broader consequences included periods of double-digit interest rates and a recession of extraordinary severity. The second, smaller, experiment lasted for a year or so from mid-1985 and involved international monetary summits and accords that orchestrated an orderly reduction in the real exchange value of the dollar of about a third in a little over a year. Neither experiment really continues. The 1979 procedures were discontinued sometime in late 1982. While intermittent summits continue, they have not created a situation in which the monetary policies of the United States and other countries are routinely coordinated.

Just how novel were these episodes? Did they mark lasting departures in the way monetary policy is made? Can existing theories of presidential and congressional influence and partisan politics in monetary policy accommodate them, or do we need new theory? And of course—though it is a little like asking Mrs. Lincoln how she felt about the play—how well do the existing theories explain the rest of monetary policy in the 1980s?

It is trite but always worth repeating that monetary policy is made in a political context. Its politics should be as subject to systematic explanation as any other. Models of monetary policy-making range from the economists' rational maximizer of social welfare to the organizational process theorist's

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muddler who stumbles incrementally from crisis to crisis. In between lies the view taken in this paper of the monetary authority as an agent, who maximizes his own welfare in the institutional context of incentives set by another (the principal) so that the agent's maximizing serves the principal's purposes.

This agency perspective has two immediate consequences. First, there is little purpose in asking whether the agent's behavior serves his or the principal's purposes. It should serve both. Instead, we seek to understand how the structure of the institutions affects the agent's performance and, at the same time, given the principal's desires, why such institutions should have evolved. Second, the Federal Reserve is an agent—in spite of its "independent" status—with *several* principals (Goodfriend 1988). Focusing on the multiplicity of principals and the agent's motives (particularly, the chairman's desire to be reappointed) integrates findings that otherwise seem contradictory. So while we do not understand the politics—or the economics—of monetary policy perfectly, the argument goes, there does not, on the whole, seem to be much need to jettison all our existing theory.

2.1.1 Two Questions, Three Theories

However, "the existing theory" is not a tight, unified corpus of empirically testable, deductively linked propositions. Even leaving aside technical questions, it includes the economic theory of regulatory capture, the political-economic theory of regulatory design, political business-cycle theory, what has come to be called partisan theory, the theory of bureaucracy, and the economics of international coordination. Throughout this rich mélange of ideas, however, most who write on the political economy of monetary policy want to answer one of two basic questions. First, what does the Fed do and why? And, given the answer to the first, should we change the design of our institutions for making monetary policy, and how?

The answers that exist come largely from three directions. One is called "partisan theory." Applied to monetary policy it predicts finding politically created effects coming *after* elections, as presidential influence is used to bring about policies beneficial to the supporters of the president's party. Evidence supports the expectation that partisan presidential influence should be reflected in regular swings in policy, that Democrats favor easier, and Republicans tighter, policies. Second, the theory of the "political business cycle" predicts easing of monetary policy *before* elections, attributed to (usually presidential) political influence motivated by the demands of reelection politics. There is supporting evidence, but it also appears (as much in the announced targets as in the actual policy outcomes) that the Fed generally avoids visible policy changes (that is, ducks out of the storm) during election years.

In fact, our model of the president-Fed relationship unifies these first two approaches. Considering the Fed chairman's desire for reappointment along with the president's desire for reelection provides predictions of different sorts of behavior at different times. Whether pre- or post-election shocks to the

money supply occur depends on whether an incumbent is running, how probable his reelection is, and how long the chairman and the president have served, among other things.

Third, "congressional influence" is also claimed to exist in monetary policy. While presidential influence is rooted in the power of appointment, congressional influence arises from the ability to amend the Federal Reserve Act. However, there is more congressional involvement in financial-regulatory policy then monetary policy, probably because the distributive aspects of monetary policy do not generally translate neatly into the geography of congressional districts.

2.1.2 One Theme: Agency Relationships

While the Federal Reserve is nominally an independent agency within the government, it is not autonomous. It lacks the ability to set rules of communication and establish the structure of incentives to which others must react—in short, to design the game. Rather, it should be expected at most to act optimally within a set of incentives created by others, its principals. It is an agent with several principals: the president, Congress, and the interest groups that make up the financial community.

Introducing principal-agent models has two main consequences. First, in general, in multiple-principal problems the inability of principals to coordinate strategies may dominate their ability, given a joint strategy, to coordinate agents' behavior optimally (Myerson 1982). Without simple, unique equilibria in such models, the posited standards that economists like to use to specify optimal economic policy in normative models cannot be rooted in rational collective action. However, absence of unique equilibria need not prevent stable interactions if principals bargain over policy and choose an agent who has strong preferences for the bargaining outcome. Then, however, in the political context of monetary policy, things that affect the bargaining outcome—say, divided partisan control of government or ideological conflict within administrations—will affect the agent's behavior as well.

Second, thinking of monetary policy this way focuses attention on the interesting feature of principal-agent problems, the agent's private information. The essence of these problems is that, while principals seek incentive systems in which agents optimally carry out principals' intentions, the agent's behavior is typically difficult to monitor, his level of effort impossible to measure, or his performance imperfectly subject to verification, any of which means that the agent knows something about the situation that is hidden to the principal. The agent exploits the private information, at a cost to the "optimal" execution of the principal's goals. The gains from specializing the agent's expertise or ability induce principals to tolerate this agency cost.

The "independence" of the Federal Reserve, that is, the space it has to pursue its own preferences, depends both on the heterogeneity of preferences of its principals and the extent of its private information. Much of the literature

on monetary policy reflects the importance of private information. How does the Fed operate? What determines voting outcomes in the Federal Open Market Committee (FOMC)? All the work on estimating monetary policy reaction functions represents an attempt to figure out what the Fed's strategy is and what, if any, rules it might have been following. Does the Fed do what it says it is doing? And does it have the effect it is supposed to? These concerns make sense when the agent has considerable private information about the economy that the principals seek to discover through appointment and reappointment power, forced disclosure, and various threats of legislative intervention, major themes in the relationship between the president, Congress, and the Fed in the 1970s.

2.1.3 Implications for Institutional Design

Studies of central bank laws and economic outcomes suggest some connection between at least partial central-bank independence of government and lower long-run inflation (Banaian, Laney, and Willett 1986; Parkin and Bade 1985). The laws set a basic structure for interaction, but practically, in the model discussed above, the Fed's independence reflects both divergence of the principals' goals and the agent's private information. I model the Fed's announced targets to find how the goals of monetary policy get chosen, whether or not there is discretion, what the structure of choice is, what rules the Fed appears to follow, and how complex they are.[2] I find no evidence of systematic deception, though one can see how strategies of ambiguity and obscurity on the Fed's part serve to maintain the Fed's at least partial independence.

The final part of the paper discusses institutional design and relates independence to accountability and effectiveness. Many economists seem disillusioned with maintaining Federal Reserve independence as a goal of policy. For instance, Meltzer (1989) concludes his review of Federal Reserve policy with a plea for institutional reform to make the Fed more accountable, particularly to the president. But empirical evidence and the model of an agency relationship make it clear that such a change would have significant and undesirable consequences beyond the ones he seeks. Similarly, Friedman (1985) seeks to coordinate presidential and congressional economic intentions better to guide monetary policy. But reducing the heterogeneity of the principals' preferences may reduce Fed independence even more than directly altering accountability procedures.

Before taking up accountability, institutional design, and the consequences of different arrangements, I review major economic and policy developments of the 1980s, bureaucracy models (which treat the Fed as autonomous), and then agency models of Fed behavior with Congress, interest groups, and the president as principals. We look first at Congress for an understanding of the institutional form of the Fed, then at the financial community to see its advantages in monitoring, and finally at the president, to unify the evidence of pre-

election and partisan cycles in policy. I characterize the targets of monetary policy directly from the records and indirectly by observing Federal Reserve actions and policy outcomes and consider whether the balance shifted between domestic and international sources of policy choice, and why.

2.2 The Economic and Political Context

To make the topic manageably narrow, I treat the study of American monetary policy as a matter of explaining the causes and consequences of decisions taken by the FOMC. The FOMC comprises the chairman and other members of the Board of Governors of the Federal Reserve System and the presidents (only some of whom vote at any time) of the regional banks of that system. Other agencies are also involved in aspects of monetary policy (for example, exchange rate management is really the responsibility of the Treasury) and the Federal Reserve has other responsibilities (often regulatory) that involve it in politics. Nevertheless, say "monetary policy" and people think first of the management of interest rates and the supply of money.

With this view of monetary policy, the natural place to begin a survey of the 1980s is actually in July 1979, with the appointment of Paul Volcker as chairman of the Federal Reserve Board. He served for eight years. I provide a description of the procedures and outcomes of monetary policy, starting with the first policy experiment. Then I place monetary policy in its domestic and international economic context and look at the instability of some important economic relationships underlying monetary policy.

2.2.1 The Policy Experiment and the Economy in the 1980s

The nature of the experiment was as follows. Briefly, in the 1950s and 1960s, monetary policy had been oriented toward providing stable money market conditions with little systematic attention paid either to monetary aggregates or quantitative measures of broader economic conditions. Starting just before the appointment of Arthur Burns as chairman in 1970, in response to developments in research and the economic record of the 1960s, the FOMC began a policy of manipulating the federal funds rate with a view to exercising some control over the growth of the money stock. In this period, both before and after a variety of congressional mandates to do so, the FOMC began publishing "targets" of monetary policy, quantitative ranges within which they hoped to steer both interest rates and the money stock. Essentially, the procedure was one in which the FOMC intermittently chose long-term targets for money growth consistent with its broader objectives (e.g., stable prices), and then, at each subsequent meeting, chose a short-term target for the federal funds rate and related targets for monetary aggregates believed to be consistent with the long-term target.

Figures 2.1 and 2.2 show the outcomes and published short-term targets (as available) from 1970–88. For the period up to 1979, the federal funds rate

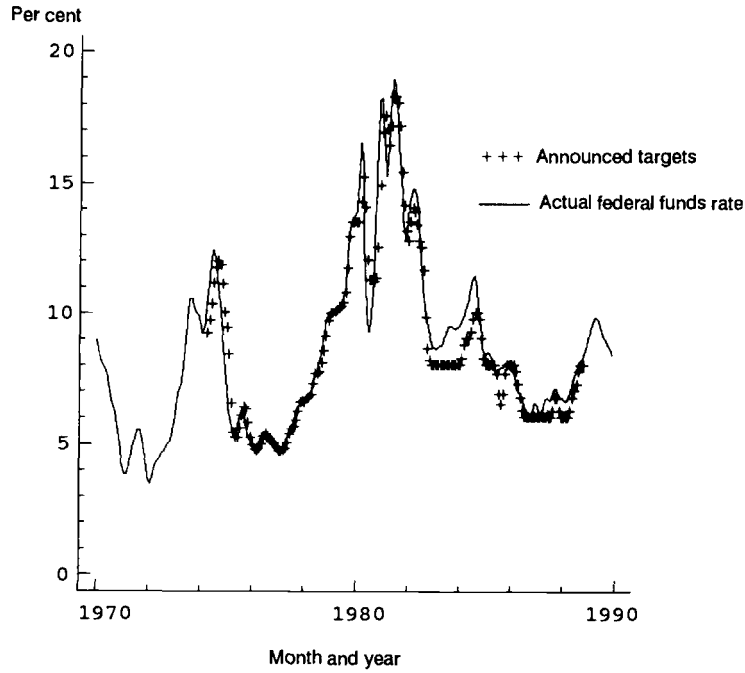

Fig. 2.1 Announced targets and actual federal funds rate in per cent, 1970–89; data have been slightly smoothed

(fig. 2.1) was closely targeted, while the money stock (fig. 2.2) generally missed even its short-term targets by a good deal, usually on the high side, apart from a brief period in the mid-1970s. Meltzer (1989) reviews several accounts of this, including underestimates of the demand for money as well as the effects of other shocks, but concludes that the Fed simply emphasized the interest rate targets and ignored the monetary targets.

Hence the 1979 experiment. Announced on a Saturday to great confusion in money markets (and some within the Fed—see Melton 1985), the reform gave greater emphasis in Fed decisions to the supply of (nonborrowed) bank reserves and less to interest rates.[3] The idea was that a change in demand for money, which previously was satisfied at an unchanged interest rate by a change in bank reserves, would now be satisfied at unchanged reserve levels by a change in interest rates. Attention focused on the narrow money supply M1, and the goal of policy was to bring down the annual rate of growth of M1 by one percentage point a year for several years from the 9 per cent growth rate prevailing in 1980.[4] The narrow money supply M1 grew exactly as hoped in 1981 and 1982, but the experiment ended some time in the late summer of 1982. Then monetary growth leapt, with M1 growing by 11 per cent in 1983 before returning to 7 per cent in 1984.[5]

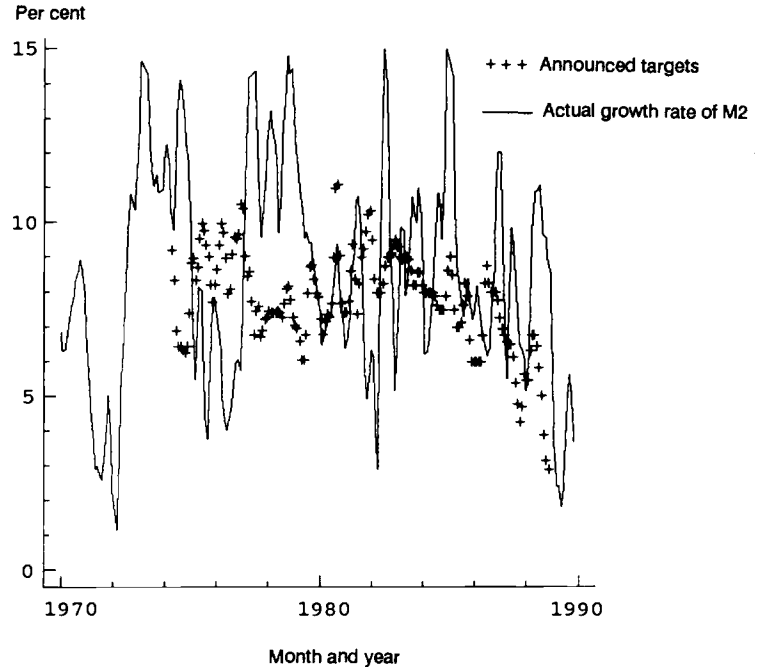

Fig. 2.2 Announced targets and actual growth rate of money supply M2 in per cent, 1970–89; data have been slightly smoothed

Figure 2.1 shows that both the level and the variability of the federal funds rate and its targets increase between 1979 and 1982. The targets for money supply M2 (see fig. 2.2) bounce around a lot in the period, and there are significant errors in outturns vis-à-vis targets, but clearly the variability of M2 also declines during the experiment. For more or less the whole period it remains within the only published long-term target growth rate range, 6–9 per cent per annum. Since 1982, the federal funds rate has resumed tracking its targets almost as perfectly as before, and huge swings—again, mostly on the up side—have reappeared in money growth.

For the 1980s as a whole, M1 growth is just under 8 per cent per annum, two points higher than in the 1970s, while M2 growth averages just over 8 per cent, the same as it was in the 1970s. As figure 2.2 showed, M2 growth is persistently higher in the first half of the 1980s, but lower in 1985–86. In terms of broader economic aggregates, table 2.1 shows that the policy-induced increase in unemployment in the early 1980s was underpredicted in the 1982 *Economic Report of the President* of the Council of Economic Advisers (reprinted in Tobin and Weidenbaum 1988) and that the ultimate reduction was achieved about two years later than initially expected. The inflation rate, by contrast, fell more rapidly than expected, though the long-run level

Table 2.1 **Outcomes and Forecasts for the 1980s**

Year	Per Capita Disposable Income Growth	Forecast	Inflation Rate	Forecast	Unemployment Rate	Forecast
1980	.5		13.5		7.2	
1981	.1		10.4		7.6	
1982	−1.2	4.3	6.2	6.6	9.7	8.9
1983	2.4	4.1	3.2	5.1	9.6	7.9
1984	4.9	2.7	4.4	4.7	7.5	7.1
1985	2.3	4.6	3.6	4.6	7.2	6.4
1986	2.7	4.0	1.9	4.6	7.0	5.8
1987	2.1	4.0	3.7	4.4	6.2	5.3
1988	3.6		4.1		5.5	
1989	. . .		4.8		5.3	

Note: Source of forecasts is the 1982 *Economic Report of the President* (in Tobin and Weidenbaum 1988). Other data are from Citibase.

seems to be about what was anticipated. However, the 1982 *Report* was not alone. Michigan consumer surveys show that people substantially overestimated the inflation rate in the early 1980s, and surveys of financial market participants show that, after an initial steep drop in the long-run expected inflation rate between the end of 1980 and early 1982, expectations for the next decade stabilized at 6.75 per cent, about the value of trend inflation to that time. Indeed, after the easing of monetary policy (the federal funds target was reduced from 12.5 to 9 per cent in August 1982), leading economists believed that the higher rates of money growth in 1983 would produce 9 per cent inflation in 1984.

By far the most optimistic forecasts of the *Economic Report of the President* dealt with fiscal policy, output, and investment.[6] Only in the election years of 1984 and 1988 (nearly) did per capita disposable incomes reach the projected levels of the 1982 report (see table 2.1).[7] In the longer term, real per capita output growth has been level at just above 2 per cent per annum since World War II, and (averaging the tax-cut-induced boom of 1984 with the recession of 1981) the 1980s are no exception. After the big surge in the early 1980s, the cyclically adjusted, constant price federal fiscal deficit is now just a little larger than one would have projected a decade earlier from 1950–79 data. Similarly, hopes that tax policy would durably affect investment proved illusory. Neither gross nor net private investment departs substantially from long-run trends (projected forward from 1979) across the 1980s.[8]

2.2.2 International Context

The second "experiment," if it existed, corresponds to the period of decline in the exchange value of the dollar in and after 1985. It was certainly not the original intention of the Reagan administration: expressing confidence that an

orderly domestic monetary policy would curb disorder in international exchange markets (1982 *Report*, p. 173), intervention to support the dollar was to be eliminated, or at most "minimal" (Sprinkel, cited in Melton 1985, p. 172). However, traces of a second "experiment" appear in figures 2.1 and 2.2 in the surge in money and easing of interest rates. But did the Fed bring down the dollar? The conjunction of a small and short-lived shift in domestic interest rate targets with a larger decline in the dollar's exchange value (and surge in the money supply) suggest that policy change was minimal, geared to signaling and orchestration of market-led developments. However, the prominence in public political discussion of international policy coordination suggests that we should try to determine more systematically whether, for how long, and to what extent, the period after 1985 reflected unprecedented attention in monetary policy to concerns of international origin.

However, international concerns in U.S. monetary policy are not new. The exchange value of the dollar intruded on domestic politics in the 1960s and 1970s as well as the 1980s. Indeed, some argue that the 1979–82 experiment had international origins, occurring only after Volcker was convinced that without an increase in American interest rates the dollar and the international financial system faced a grave crisis. Others believe that the 1982 policy easing was brought about by the possibility of a banking collapse caused by the effects of high real interest rates on Third World debt. Both these episodes are international aspects of domestic problems. Neither case really shows the Fed doing something for international reasons that it would not have done for domestic reasons. Thus, whether there really was a second experiment depends on whether international concerns became goals of policy after 1985 in an unprecedented way, and whether monetary policy was actually coordinated (as opposed to being the subject of public discussion and negotiation) among nations.

What was different in the 1980s? First, it was a period of dollar strength and capital inflows. Figure 2.3 charts the real effective exchange rate of the dollar since 1967.[9] The real dollar declines by something like 30 per cent between 1970 and 1978, bottoms out in 1979–80, and, after 1980, commences a huge upward surge that lasts half a decade before coming down (even quicker) and stabilizing around its 1973 levels in 1989–90. Movements in net foreign investment, the capital inflow left after imports and net international transfer payments are subtracted from exports (the lower series in fig. 2.3), closely follow the real exchange rate in the 1980s. In fact, they only share common trends; Granger-type tests show that neither "causes" the other.

Moreover, from the end of 1981 to 1985 American real interest rates (long-term bond yields minus expected inflation) were above—often significantly above—the range of comparable long-term real interest rates of the two principal substitutes for the dollar, the yen and the deutschmark. In the period of dollar weakness in the late 1970s the real return on dollars is *below* the substitutes' range, but only at the end of the period in 1978 and 1979. And this

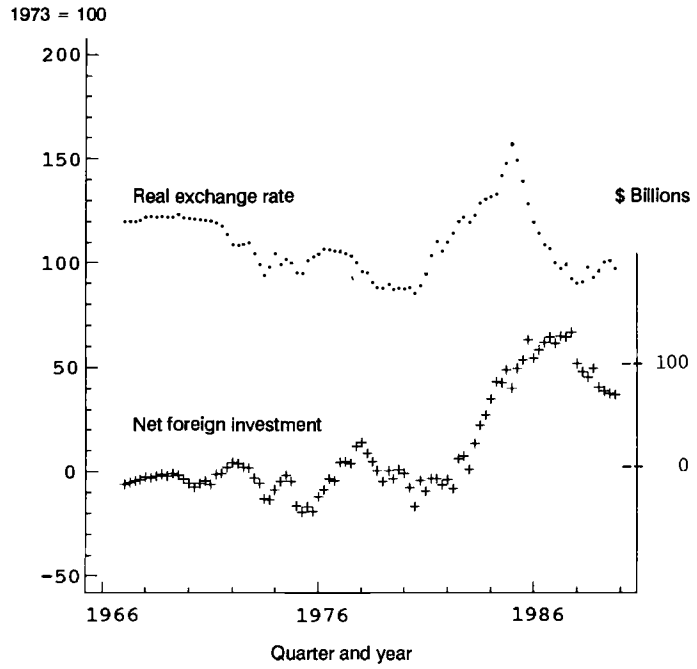

Fig. 2.3 Real trade-weighted relative U.S. exchange rate, left scale, March 1973 = 100 and net foreign investment in billions of 1982 dollars, right scale, 1967–89

takes place in a context of growing dollar deposits outside the United States: the eurodollar market had grown enormously, from one-fortieth of M2 in 1965 and one-tenth in 1970 to equality by 1980.

However, the relationship between the dollar's real exchange value and American real relative interest rates was not new in the 1980s. Possibly the direction of effects changes, from interest rates set for domestic purposes affecting exchange rates to interest rates set to affect the exchange rate having other domestic consequences. Moreover, other factors influence real exchange rates, and some of them are political. We analyze these, and also describe the (limited) impact of international factors on American monetary policy, below.

2.2.3 Changing Economic Relationships in the 1980s

While output and investment remained close to long-run trend values in the 1980s, some economic relationships involving money ceased to hold. For one, there is the well-known decline in the velocity of money. The steady decline in the ratio of M1 to gross domestic product (a stable rate of growth in the velocity of money) through the 1970s changes abruptly in the 1980s. Without predictable velocity, there is no point in trying to control money

growth. The cause of the change, still disputed, could be technical changes in the definition of M1, unanticipated complexities in the money-income relationship, or the impact of foreign demand (not pumped back into U.S. output) on the growth of M1 in the 1980s.

Second, the relationship between money and inflation, loosely established over the 1960s and 1970s, also vanishes. A simple monetarist inflation model using quarterly M1 money growth plus its last four lags to project annual inflation in the quarter one year ahead, as shown in figure 2.4, does a good job of capturing broad contours of consumer price inflation from 1960 to 1979 (though the peaks of inflation, particularly in the 1970s, tend to overshoot the cumulated effects of money growth). But forecast forward from 1979—that is, fix the coefficients estimated for 1960–79 and simulate the effects of observed money growth in the 1980s—and the model utterly fails to predict the inflation rate. In fact, the parameter estimates from the 1960s and 1970s predict 20 percent inflation in 1987, and nothing in the model predicts the fall in inflation in the early 1980s. A parallel forecast (not shown) using M2 is less extreme, and does pick up the decline of inflation from 1979 to 1982, but also predicts double-digit inflation after 1985. Neither model predicts the lack of inflationary impact of the surge in money growth after 1985.

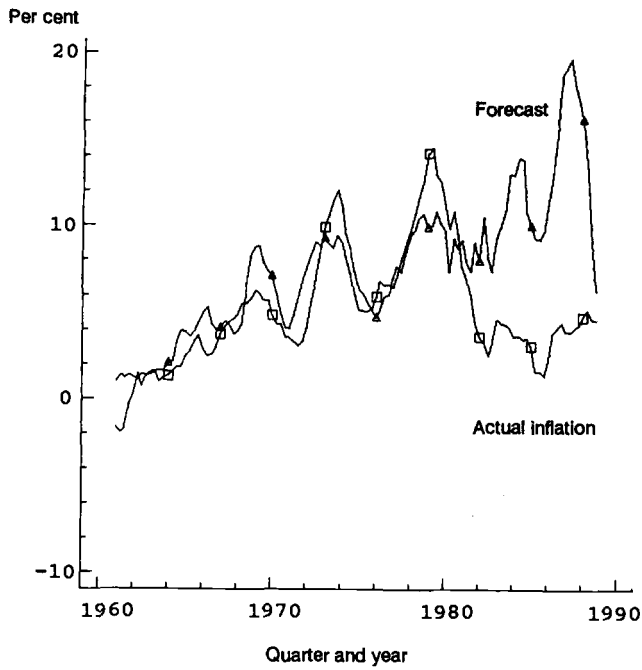

Fig. 2.4 Inflation rate based on consumer price index and forecast one year ahead from money supply M1, quarterly, 1960–89

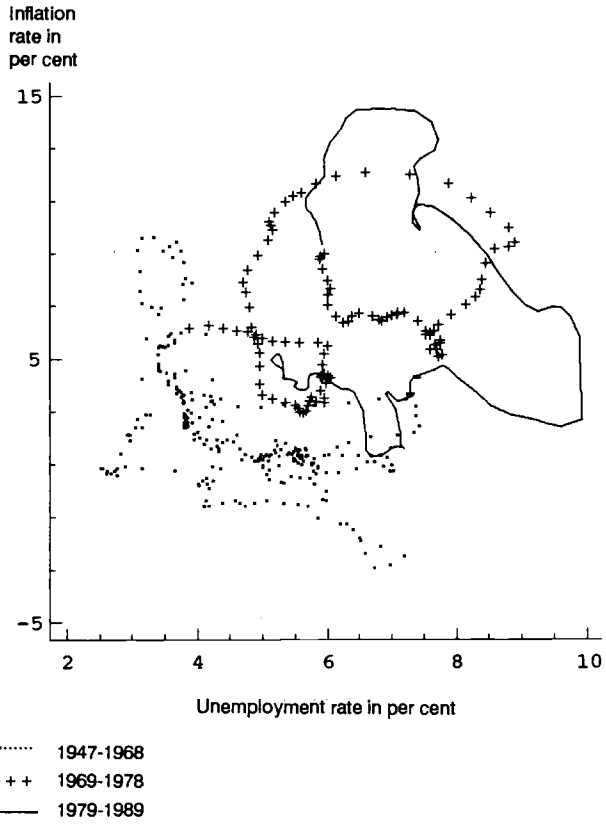

Fig. 2.5 Inflation rate based on consumer price index and unemployment rate, monthly, 1947–89; data have been smoothed

Finally, figure 2.5 provides a historical chart of inflation and unemployment. It shows the broad contours of the trade-off in the years before 1969, with the recession loops of 1949, 1958, and 1961 visible along with the inflationary surge of the Korean War. Starting in 1969 there is first the Nixon loop, ending in the vertical inflation acceleration of inflation in 1973–74, and the Ford-Carter loop, ending in the vertical acceleration of 1978. The counter-inflation policies of the 1980s, neither immediately credible in the financial world nor the beginning of an era of stable money growth, had significant employment costs, but their extreme values lead ultimately back to values in the middle of the Nixon loop of 20 years ago. But are we a 4-point blip up in inflation away from starting the 1980s over again? Or a 2–3 point reduction away from getting back to that golden age, the trade-off of the 1950s?

2.3 Political Models of Monetary Policy—Agent and Principals

2.3.1 Inside the Fed

The Federal Reserve has a broad mandate to manage money "in the public interest." Most of its decisions lack controversy and are made in secret, its Governors serve long terms, it controls its own budget. Thus, many economists model the Federal Reserve as a unitary actor formulating monetary policy to maximize social welfare. Even such an actor maximizes subject to beliefs about how the economy works, so understanding its choices in the 1980s requires taking account of the influence of prolific scholarship by monetarist economists in the 1970s and later those interested in international coordination of policy on policymakers' views of fundamental relationships between money, inflation, interest rates, and exchange rates. Economists are active pamphleteers on this supply-side of the market for ideas, but each policy experiment also shows how the demand for "solutions" was increased by an unprecedentedly prolonged problem, inflation in the 1970s and the high real dollar exchange rate in the 1980s.[10] Diverse research staffs of the regional banks ensures that new ideas get inside representation somewhere within the system, even if monetarism itself was resisted by many bank officials.

Leaving aside the beliefs, whether the Fed is agent or independent, its objectives need to be characterized. "Bureau" theorists treat the Fed as autonomous and explain its behavior as self-interest on the part of Fed officials. For instance, the Fed earns revenue from interest on securities purchased in open market operations. It could be that the Fed maximizes revenue to maximize spending (Toma 1986) or employment (Shughart and Tollison 1986). However, while the Fed consumes more when it earns more, neither paper shows that it generates excessive revenues. In fact, the Fed turns over most of its excess revenue to the Treasury. It could also be that the Fed seeks to increase its influence (Beck 1988), an idea that is particularly important when the Fed's regulatory powers are at issue.

Finally, authors as diverse as Chant and Acheson (1986) and Woolley (1984) stress the Fed's goal of maintaining or increasing discretion, independence, or flexibility. Others suggest that "avoiding crisis" is its goal. But, by themselves, flexibility, independence, and crisis avoidance are less goals than operating procedures. Some independence comes with private information, and naturally the agent does not give it up. Moreover, some goals are being pursued even while attention is paid to the risk that things might get out of hand: crisis avoidance says nothing about what these goals are, beyond the ideas of bureau theory.

Since a good deal of policy disagreement exists within the Fed, its policy goals may not be consensual. Voting behavior in the FOMC can be analyzed to describe the Fed's "welfare function." Though the chairman dominates Fed

decision making (see Kettl 1986 in leadership), even a strong chairman like Volcker was overruled on at least two occasions, once in 1984 and once in 1986,[11] and dissents from FOMC directives are common. Woolley (1984, 62–64) pointed out that presidents of regional banks were more likely to dissent for tighter policy, while governors were more likely to dissent for easier policy. Moreover, he shows that over 80 percent of those governors' dissents favoring tightness were cast by governors appointed by Republican presidents, a point which takes on more significance in the context of the relationship between Fed and president (below).[12]

2.3.2 Congressional Politics and Oversight

The traditional view of the relationship between the Federal Reserve and Congress is that, while the Fed is technically subject to congressional control and is an agency created by the Federal Reserve Act, which can be amended by Congress, the relationship remains largely symbolic. Of course Congress (with the president's consent) could change the Fed's status, and legislation is frequently introduced with that purpose. However, this legislation rarely passes, and, on the whole, while Congress has sought more information about monetary policy and complains vocally when interest rates are high, it has never moved positively to take direct control of monetary policy. Moreover, Congress does not appropriate the Fed's budget, and thus the Fed avoids normal congressional oversight.

In fact, the Fed is an example of what McCubbins and Schwartz (1984) call "fire-alarm oversight." The Fed's mandate is broad and vague. Such a mandate promotes the possibility of regulatory capture by the affected industry, whose activities facilitate the reelection of congressional representatives. The costs of such capture to the public are widely dispersed. As long as the industry is content, Congress is as well, and hence Congress attends to policy only when it gets complaints from interest groups—the fire alarms. When divisions appear *within* the financial community, not only the Federal Reserve but also representatives of different sectors *within* the financial industry become directly involved. Financial deregulation legislation in the 1980s—"nonbank banks"—was a case where a wide division of interest between smaller and larger institutions coupled with changes to and fro in composition of congressional committees produced years of legislative initiative and frustration (Woolley 1988b).

Does Congress influence monetary policy anyway? Grier (1988) argues that politicians who especially need to serve constituents with policies requiring monetary outcomes will join the committee that controls monetary policy. If the committee has veto power, then there will be an equilibrium in policy reflecting the committee median policy position. If the committee chairman has a veto, it will be the chairman's policy that dominates. Thus changes in committee chairs—or, more specifically, changes in the relative distance of chair from committee median or of the committee from the chamber me-

dian—produce changes in policy. Direct congressional hearings or control are not required, since ex post threats to reduce the Fed's independence (that is, to amend the Federal Reserve Act) are sufficient to extract compliance.

Three testable empirical propositions follow from this model of Fed as agent and Congress as principal. There should be (1) self-selection onto the banking committees of representatives with strong banking interests in their constituencies, (2) attempts by Congress to reduce the Fed's private information to improve monitoring and verification of performance, and (3) monetary policy changes corresponding to changes in the preferred policies of congressional chambers, committees, and chairs.

Bank PACs concentrate donations to Banking Committee members (Woolley 1984, 135). Woolley (1988b) demonstrates self-selection, with banking committee members' districts overrepresenting the national average in savings and loans and real estate presence by about 2:1. These representatives are the "high demand" preference outliers that populate committees. Krehbiel (1991) cites Shepsle's (1978) evidence that the best predictor of requests for Banking and Currency is "financial or real estate occupational background" to support information-economizing in committee appointments, as Congress organizes efficiently to discover the agent's private information but waits for specialist interest groups to raise the fire alarms.

Second, there was a flurry of congressional activity over information in the 1970s. Ultimately the GAO was authorized to audit the Fed's administrative practices, if not its monetary policies. Kettl (1986) reports that the Fed cut in half the time it waited to release FOMC directives in 1975 "to deflect congressional pressure for full disclosure." Confronted with an adverse court decision in a Freedom of Information Act suit in 1976, the Fed reduced the delay still further, but at the same time cancelled its long-standing policy of keeping (but publishing with greater delay) minutes of its meetings. Other legislation compelled the Fed to publish its targets and the chairman to report to Congress on them. (However, Fed chairmen can generally cloak themselves in vagueness, and there has frequently been little understanding of monetary policy in Congress.[13]) Peterson and Rom (1988) report that chairmen of the Fed frequently take the opportunity of a visit to Congress to criticize fiscal policy. While a partially successful effort was made to lower the costs to Congress of monitoring Fed behavior, the Fed was able to maintain the secrecy with which its decisions had traditionally been taken. Woolley (1984) gives an excellent history of the debates over Congressional attempts to increase scrutiny of (if not responsibility for) monetary policy. In fact, while the toothless measures that ultimately passed led scholars to conclude that Congress was largely irrelevant to monetary policy, if Congress was trying to preserve fire-alarm oversight, but increase its—or even more, financial interest groups'—ability to monitor the Fed, this conclusion is misleading.

Grier (1988) claims that significant changes in monetary policy coincide with ideological changes in Senate Banking Committee chairs but changes in

1980 make this ambiguous.[14] In a recent paper I have been unable to obtain, Ferejohn and Shipan report a similar finding for the House. Belden (1989) reports a consistent but statistically insignificant difference in the likelihood of bank presidents' dissents when Proxmire was chair compared to Sparkman and Garn. All this is possible, but not conclusive. A note of caution: Grier closes his paper with the prediction that the change from Garn back to Proxmire after the Democrats regain the Senate in 1986 should produce monetary easing. A glance at figure 2.1 shows that it does not.

One other thing is clear. Widespread distress and anger over high interest rates gets Congress to take public positions decrying monetary policy. The flurry of congressional activity in the mid-1970s was triggered by the 1975 recession. During the 1979–82 experiment, many bills were introduced in Congress, including proposals condemning high interest rates, requiring the president to assure adequate affordable credit to small borrowers, requiring the Fed to abandon money targets and reintroduce targeting of interest rates, and even one to impeach Volcker (Woolley 1984). Kettl (1986) produces more systematic data on congressional attention, which are measured as the total of congressional bills and resolutions each year addressed to the Federal Reserve or monetary policy. I extended his data through the 1980s, and over half the variance in congressional attention, year to year from 1950 to 1988, can still be explained by a simple regression model involving only the current short-term interest rate.[15] From the point of view of individual constituents (unlike interest groups), this congressional position taking and blame shifting dominates Grier's "distributive politics" view of monetary policy: the geographic basis of the distributional consequences of policy are insufficiently clear to justify the sort of specialization to committee oversight required by his theory.

2.3.3 The Financial Community

The Fed's broad mandate along with heavy congressional involvement in *intra*sectoral disputes and blame shifting when interest rates are high are all consistent with the model of financial community as coprincipal. The financial community has all the usual resources discussed when an industry "captures" its "regulators." It has information that the Fed needs, and it supplies personnel through circulation and recruitment of staff. Many staffers and FOMC members come from financial industry backgrounds and expect to return. For example, when Robert Heller quit the Federal Reserve Board of Governors (citing low salaries), he became vice president of a bank.

The financial community is clearly able to monitor Fed behavior. The Fed and the financial community interact frequently. Goodfriend (1988) points out that business representatives serve as reserve bank directors. There is regular contact with the financial community through the New York Fed. Formal contact through the Federal Advisory Council and informal contact through meetings coexist. The regional bank presidents provide direct representation on the FOMC. Bank representatives' public statements indicate general happi-

ness about Fed policy (Woolley 1984). Since the interest groups rarely go public (except on regulatory matters)—that is, the fire alarms do not go off too often—they must have alternative strategies for monitoring.

What the financial community seeks is generally taken to be stability and predictability in market conditions (Poole 1976). Fed performance will be easily verifiable, since both open market operations and the stability of interest rates are routinely observed. In fact, the main argument against the view that the financial community is the Fed's principal (though not against their desire for stability) is the community's broad opposition to the monetary targeting experiment (Woolley 1984).

Does the experiment show that the financial community ceased to obtain interest rate smoothing from the Fed? Hardly. First, a glance at figures 2.1 and 2.2 shows that interest-rate smoothing seems far more important than monetary stabilization. There is more variance in interest rates 1980–82 (and less than usual in monetary targets) but closer inspection shows how briefly this lasts and how interest-rate smoothing has reasserted itself. The Fed's interest-rate targets vary a little more in the 1980s than in the 1970s, and of course since 1980 it has only published a 4 percentage point range, not an individual target value. Nevertheless, the impact of the "experiment" was smaller than one might believe from some of the contemporary descriptions.

Table 2.2 formalizes this with estimates of an error-correcting model (Davidson et al. 1978) of the target-setting function. The error-correcting model is of the form

$$\Delta T = \alpha + \beta \Delta X + \gamma(T_{-1} - \delta X_{-1}),$$

where ΔT is the latest change in the announced target, ΔX is the latest observed change in the federal funds rate or money supply, and T_{-1} and X_{-1} are most recent observed levels. The parameters to be estimated include any secular trend (the constant, α), the short-run effect of the last observed change in outcomes(β), and the effect of the long-run, cast as a reequilibration rate (γ) of the deviation of the last target from its equilibrium level δX_{-1}. The results for the federal funds rate are easy to understand. For the whole period, they show that 70 percent of the last change in interest rates is accommodated in the current change in the target. That is, changes in the target follow changes in the outcome, but damp the extent of the changes. Coefficients hardly change in the short period of the experiment, though the mean change is larger by a factor of six and the standard error of the regression is bigger by a factor of two, indicating greater target variability in this period. The reduction in the δ coefficient suggests that the equilibrium level of interest rates was now below the observed level during the period, which is believable given double-digit interest rates.

With respect to monetary targeting, no monetary variable—base, free reserves, or M2 changes—ever appears significantly in the target equation. The overall structure remains the same in the policy experiment period as in the

Table 2.2 **Error-Correction Model of Monetary Targets, 1974–88**

	Whole Period	1979–82 Experiment
Equation (1), federal funds rate:		
α	.05	.70
β	.70*	.69*
γ	−.35*	−.40*
δ	1.0*	.80*
R^2	.54	.60
Observations	176	48
SE	.58	.90
Equation (2), money supply M2:		
α	2.42*	5.68*
β	.08	.24
γ	−.28*	−.52*
δ	.03	−.25
R^2	.12	.27
Observations	176	48
SE	1.1	1.2

Note: Data are from Citibase and the Federal Reserve *Bulletin*, various issues. Targets in months in which the FOMC did not meet are given their previous values.

*Coefficient is significant at .05 level or better.

whole period, one of return-to-normality targeting around an exogenous, unchanging long-run target level. The reequilibration coefficient is twice as high in the short period, so the pull back to equilibrium target level from deviations is stronger. Hence, targeting appears to follow orthodox monetarist recommendations: a single long-run target for money growth with much closer attention paid to complementary short-run money growth targets during the policy experiment. That, with the reestablishment of interest-rate smoothing after 1982 suggests that the financial community continues to get what it wants most, which is stable and predictable operating conditions.

2.4 The Political Monetary Cycle with the President as Principal

2.4.1 Cyclical theories

There are two political-cyclical theories of macroeconomic policy. One, the "political business cycle," predicts that reelection desires of politicians lead them to create desirable economic conditions immediately before elections, even if these policies require costly adjustment later. If a short-sighted electorate rewards governments for such behavior, the electorally induced cycle creates unnecessary costs (Nordhaus 1975). The other, "partisan theory," predicts that partisan governments deliver benefits to their core constituencies. Economic policy choices have different distributional consequences for these con-

stituencies, and politicians deliver these redistributions through economic policy. Modifications have been proposed since Hibbs's (1977) original work on partisan preferences for unemployment and inflation, but all predict policy changes of a redistributive nature in post-election periods.

While Hibbs predicted policy changes persisting across entire incumbencies, others have proposed that post-election effects should be transitory. For one, rational economic models imply that private-sector adjustments will offset political shocks, at least once the "surprise" of discovering which party wins the election has worn off (Alesina and Sachs 1988). Alternately Chappell and Keech (1988) propose that rising inflation may raise the cost of reducing unemployment (and vice-versa) beyond what a support-maximizing government would pursue. Also, the need to build new coalitions dictates policy changes once the "debt" to one's supporters has been paid off (Alt 1985). The evidence suggests that post-election policy shocks—when observed—have had transitory effects, but the reasons have not been tested against each other.

However, some find the theory inapplicable to American monetary policy, citing the Fed's "independence" or the neutrality of anticipated monetary policy. The empirical evidence—which should really be decisive—is divided. Scattered findings support the pre-election theory in monetary policy (e.g., Grier 1984; Haynes and Stone 1988) while others contradict it (Beck 1987). Chappell and Keech (1988) show that post-election effects appear to exist but have limited impact on the real economy.

I unify these two theories in a simple model in which both pre-election and post-election effects could appear, but in which the timing of the chairman of the Fed's appointment has a critical role in determining monetary policy.[16] This model also helps us understand some important, but more anecdotal, questions raised by the first policy experiment, given our political theories of monetary politics. For one, the experiment employed monetarist procedures and targeted money and inflation to an unprecedented extent. Partisan theory makes the fact that Volcker, who spearheaded the experiment, was appointed by a Democratic president seem anomalous. Moreover, the apparent beginning of a credit squeeze in an election year (1980), with an incumbent running for reelection, seems to contradict political business cycle theory. We will take up these episodes after discussing the model and the other evidence.

2.4.2 Reappointment Politics

If the president is the Federal Reserve's principal, his ability to set incentives has to derive ultimately from one of three sources: the power of appointment, the president's influence over nonfinancial economic policy, or the strength of moral suasion, which inheres in elected representatives with popular mandates to change policy. The last exists, but it wears off quickly after elections. Influence over nonfinancial policy is most important when coordination with other executive agencies is most useful or necessary for successful execution of monetary policy, as, for example, when an internationally coor-

dinated intervention is an object of policy. Beck (1982) points out that appointment power is limited. Fed governors, after all, serve 14-year terms, and the presidents of the regional banks are not subject to presidential removal.

There is indirect evidence of presidential influence on FOMC voting. Recall that Woolley (1984) showed that voting for easier or tighter policies varied with partisanship of the appointment. Moreover, in the FOMC governors vote differently from regional bank presidents. Gildea (1987) shows that Federal Reserve Board Governors' political affiliation affects how likely they are to vote for noncontractionary policies: self-described Democrats are more likely to favor easier policies. (Surprisingly, he does not check whether political affiliation covaries with party of the appointing president.) He also shows that whether governors' (and again, other FOMC members') vote for monetary ease apparently depends on the U.S. president's current approval or disapproval rating, though, of course, this disapproval rating is itself a weighted combination of current economic conditions (among other things).

The president's power to appoint the Fed chairman is more important. Political business cycle theory makes the president's desire for reelection a prime policy motive, but why should the president's desire for reelection be so much stronger than the Fed chairman's desire for reappointment? Obviously, the chairman's problem is different: reappointment requires the approval of both the president and the financial community, each of which acts as a constraint on his desire to promote the interests of the other. Moreover, the interaction of the electoral cycle and the appointment cycle have clear implications for the strategy of a chairman seeking reappointment.

Consider first the post-election period. The president has been elected, and he is aware that his early-term actions constitute an important signal to the electorate about policy. The Fed chairman, formerly up for appointment in year 2 of the presidential term, recently in year 3, has a clear incentive to give the president what he wants, at least initially.[17] If what the president wants is consistent with what the financial community wants, he has even more incentive to do this. The less common history the president and chairman share, the larger this same incentive. So one would expect to observe early-term monetary policy following the desire of the elected president, more so when the president is new since first impressions count relatively more then, and more so when the president is a Republican, if there is closer convergence of preferences of the financial community and the Republican Party. This treats the interaction as an iterated game of incomplete information in which the president tries to discover the chairman's "type," before reappointing him, introducing elements discussed in reputational models of monetary policy (Rogoff 1985, 1987).

By contrast, in the pre-election period, the chairman still wants reelection but is not certain who will be reappointing him. The temptation must exist to give the incumbent what he wants, more so when the incumbent's reelection is more probable, though, paradoxically, the more likely the president is to be

reelected, the less he needs the chairman's help. Essentially, the chairman must balance the probability of being seen to have offered a decisive advantage to whomever won with the probability of being seen to have offered a critical disadvantage to whomever won (in spite of it). However, the chairman does not know who will win the election any more than anyone else does. Much depends on the visibility of the chairman's actions. Since monetary policy is now followed closely in the media, significant actions are sure to be noticed.

Hence his strategy should be to take a middle course, and not be seen to have done anything significant, in view of the fact that he gets another chance to maximize his reappointment probability *after* the election, certain then of whom he has to please. Such a policy of not being seen, of "ducking out of the storm," has at least two testable implications. Since you get noticed when you shake things up, you keep things quiet: hence, the variability of targets should decline in the pre-election period, as large and frequent changes are avoided. Similarly, you get noticed when you step out of line: so the incentive to accommodate (e.g., fiscal policy) should also be strong.

But there are further implications. In almost any version of rational expectations economics, only unanticipated monetary policy has real effects. "Giving the president what he wants" post-election will be the easier, the bigger a surprise the reelection is. Clearly, when the election outcome is uncertain, some surprise is certain. But the surprise can bigger if the financial community expectations of Fed behavior are less clear. They could be made less clear by a deliberate policy of variability before the election. This sort of behavior is a feature of the model in Havrilesky (1987) and (without the electoral context) in Cukierman and Meltzer (1986). However, while this would increase the value of the post-election policy, it conflicts with the chairman's best pre-election strategy of not being noticed. The chairman's choice will depend on his attitude toward risk.

Finally, you cannot "give the president what he wants" if he does not want anything. "What he wants" is what the central economic issues and promises of the campaign indicate policy should be. That may not seem to be much of a restriction, since 1972, 1976, 1980, and even 1984 all featured campaigns with evidently central economic themes that had implications for monetary policy. It is less clear that the 1988 campaign called for a major innovation in monetary policy as an essential ingredient of the president's program. This general rule, that elected politicians do not rush off to do something they have not bothered to promise to do, was a strong result of earlier work on partisan cycles in unemployment rates (Alt 1985) and should be a source of variability in the monetary policy cycle as well.

To sum up, the presidential-principal-political monetary cycle is rooted equally in the (constrained) reelection and reappointment motives of the principal and agent. It is contingent on visibility: the chairman's decision rule would be different if no one paid attention to monetary policy, since caution

comes from fear of being dragged into the campaign. Presidential suasion or legitimacy of the electoral mandate and the chairman's reappointment motive coincide in the post-election period, so it is here that presidential influence on monetary policy should be greatest, with form and extent varying as described above. While the shocks could be big, they should be transitory. If there is a pre-election cycle in monetary policy, it should more recently be a by-product of accommodation or caution, as the visibility and attention paid to monetary policy has increased. The next sections show that quantitative evidence, extended where possible to include the 1980s, is reasonably consistent with this model. So are some brief and admittedly journalistic accounts of recent appointment and reappointment highlights: some thoughts on Burns's quest for reappointment in 1977 and Volcker's in 1983, and a view of why Carter chose Volcker in spite of the Democratic preference for easier monetary policy.

2.4.3 Ducking out of the Storm

There is a little recent evidence of pre-election cycles. Hibbs's (1987) history of the Carter administration shows it was the opposite of the political business cycle, with the boom first and the contraction before the election. The Reagan incumbency looks just right, but it is a Republican presidency, so the pattern of recession early and boom later is also consistent with partisan theory. From 1984 to 1988, unemployment trends down (like 1964–68), offering no evidence either way. However, growth in real personal income is highest in the two presidential election years in the 1980s, as the literature on economics and election outcomes predicts (see table 2.1).

But if there is a political business cycle in real per capita disposable income growth, are its origins in monetary policy? The first part of table 2.3 shows

Table 2.3 **Money Growth Differences before and after Elections**

Year	Pre-election Growth Rate	Year	Post-election Growth Rate	Party
1960	−2.2*	1961	+2.1	Dem
1964	1.1	1965	+.6	Dem
1968	2.7	1969	−3.8	Rep
1972	1.8	1973	−2.4	Rep
1976	.8	1977	+2.4	Dem
1980	−1.8*	1981	−.7	Rep
1984	−1.8*	1985	+4.7*	Rep
1988	−8.4*	1989	−3.2	Rep

Note: Entries are annual growth rates of M1 in percentages. Post-election rate is December–December, minus the average of the two previous years (*source: Economic Report of the President* 1989). Pre-election growth rate is the average of the monthly changes over the election year minus the average of the previous two years (*source:* Citibase). Dem = Democrat; Rep = Republican.

*Sign is opposite of expected value.

that, while money growth accelerated in the year before a presidential election (relative to the two-year average before) in 1964, 1968, and 1972 (statistically significantly so only in 1968 and 1972, according to Hibbs 1987), the effect in 1976 is smaller and in the 1980s there is never a positive pre-election surge in monetary policy. This implies that the empirical evidence for and against an American political-monetary cycle may rest on the choice of the period examined. Anyone who continues to include pre-1972 data (observation of which led to the theory in the first place) is likely to find a four-year cycle; this is less likely for anyone using the post-1972 period.

This does not mean there is no pre-election politics of monetary policy, however. The "credit crunch" of March 1980 is sometimes cited (Beck 1987) as contrary to political business cycle arguments, but there was an even more extraordinary back-off in targets and policy across the summer of 1980. The decision to raise the federal funds target in March was more than reversed over the next two months, leading to wide swings in money growth over the year. While Mayer (1987) quotes Volcker at the time as saying "the sooner the recession begins, the better," the rapid policy reversal suggests that his carte blanche from the administration to reduce inflation was actually a postdated check, meant to take effect no sooner than late autumn. Greider (1987) alleges that when Volcker was outflanked by a majority favoring further tightness in the summer of 1984, he personally overrode the majority and instructed the open market operations desk at the New York Fed to maintain an unchanged course. Similarly, all the highest rates of money growth in 1988 are observed in the summer, as the actual money growth rate bows upward and stays above the targets all the while the targets are falling. All these episodes are the true pre-election politics of monetary policy, devices to stay out of trouble, keep policy from becoming too visible, hence "ducking out of the storm."

Moreover, Beck (1987) claims that statistical evidence of variations in money growth in election years cannot be found. However, he finds that Fed policy accommodates budget policy. If an electoral cycle in fiscal policy produced increased demand for money before elections, the Fed would accommodate this, introducing pre-election easing apparently without policy changes. The Fed's operating procedures appear to continue to accommodate money demand at given interest rates. So in election years, if fiscal policy is the source of the cycle, prudent politics plus usual procedures dictate accommodating it. This will hardly show up in statistical analysis, since accommodation is passive and not discontinuous.

Finally, consistent with this view of pre-election politics, there is evidence that target variation from month to month declines in election years. This incentive to stay out of trouble follows from the visibility of policy, increased by the more rapid publication of agreed targets in directives after the mid-1970s. Table 2.4 shows that, apart from the *annus horribilis* of 1980 described above, with its big crunch in March cancelled in April until the election was over, monthly federal funds rate target variability is always lower in

Table 2.4 Target Variability, 1974–88

Years	Observations	Standard Deviations of Targets of Federal Funds	Standard Deviations of Targets of M2 Growth
1976	12	.22	1.62
Rest of 1970s	69	.73	1.35
1980	12	1.73	1.81
1984, 1988	24	.51	.72
Rest of 1980s	72	.91	1.02

the 12 months preceding the election (covering 1976, 1984, and 1988) than in other years. It is not that the levels of targets are higher or lower, they are just less variable. This is less true for monetary targets, but for politically sensitive interest rates, the point seems to be to convey "no change." Consequent on less target variability in election years, as above, is that money demand is even more likely to be accommodated if demand changes through the budget.

2.4.4 Post-Election Partisan Cycle

Evidence for the post-election partisan cycle in output (Alesina and Sachs 1988) and unemployment (Hibbs 1987) is well known. Hibbs (1990) shows that this unemployment cycle induces (with lags) an inflation cycle that affects rates of return on stocks and bonds as well as corporate profits and disposable incomes. Moreover, the cycle appears to be monetary in origin, at least to some extent. The second column of table 2.3 shows that money growth in the immediate post-election year (measured December–December) follows the partisan cycle neatly, though irregularly in size, save that 1985 is way out of line.[18] In every other case, the prediction of partisan theory is fulfilled and the president "got what he wanted" from the Fed.

The absence of the cycle in 1985 probably does not mean that the partisan cycle is declining. Figure 2.6 shows forecasts from Hibbs's (1987) monetary policy partisan model, estimated from 1953 to 1980. These are very similar to results he publishes based on data through part of 1982. These parameters are then used to forecast the model through the 1980s, supplying money growth and inflation exogenously. The model is on course through the recession, which implies that 1981–82 economic policy was not an outlier vis-à-vis long-run Republican post-election policy. The forecasts do not quite pick up the 1983 boom, which is bigger than expected, but are back on course for the 1984 election. It then misses the 1985–86 monetary expansion, the second policy experiment. However, by 1987–89, the forecasts are back in range. Since the long-run model is still on course at the end of the period, the period offers no support for throwing out the model.

Does the chairman run for reappointment? Martin apparently did so in 1967, as revealed in documents from the time (Woolley 1984, 116). Greider quotes a Fed official as saying that Burns in 1977 expanded the money supply

(consistent with partisan theory predictions about what the president would have wanted): "There was a rapid shift in monetary policy and it was designed to ingratiate Burns with Carter so he would be reappointed chairman" (1987, p. 346). Greider also contrasts Burns's post-election expansion with the fact that he did not "play political games to help re-elect Gerald Ford." Exactly. If you want to be reappointed and you do not know who will be doing the appointing, caution before and cooperation after is the way to go about it. In 1981, what Volcker wanted was what Reagan wanted (but see below), and Greider extensively describes Volcker's hopes of reappointment after 1984. Of course, just as the president's reelection motive is not the *only* source of policy, the chairman's reappointment motive is not the *only* source. But incentives for it and its effect on post-election policy are strong.[19]

So why then did *Carter* choose Volcker, who was known not to be a team player and who had strong anti-inflation preferences? Anyone who looks at the annual data in King and Ragsdale (1988) can estimate a model of president

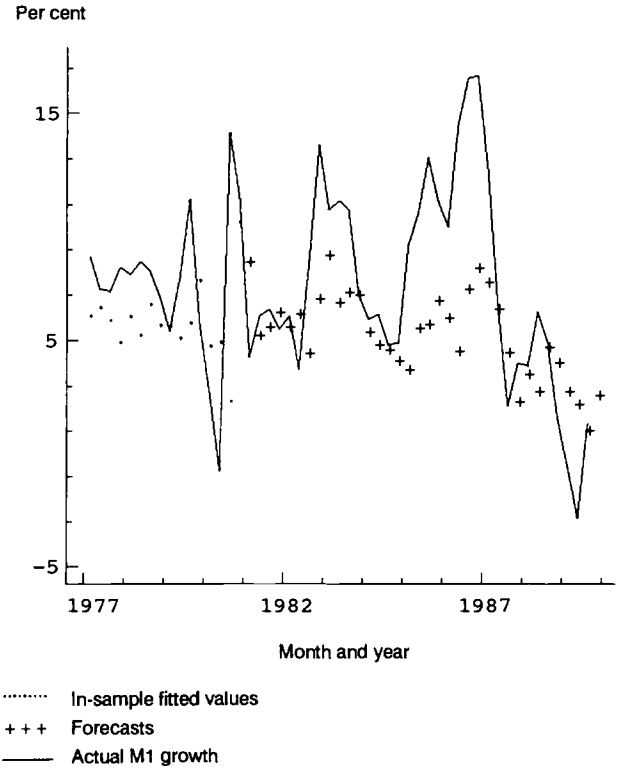

Fig. 2.6 Rate of growth of money supply M1 (quarterly changes at annual rates, smoothed) and in-sample fitted values forecasts from Hibbs's (1987) partisan model, updated to 1953–89

approval ratings in the postwar period in which approval is increased by the (longer-term) perception that the president's party is best able to handle whatever the individual regards as the most important problem facing the country, but reduced by the amount of current inflation (in peacetime; prolonged wars also reduce approval ratings).[20] By 1979 the cost of living was seen as the most important problem facing the country by 60 per cent of the public; it was the seventh straight year it had led the list, beating Watergate, energy, and unemployment in turn. So Carter faced a double problem in terms of his approval rating. He needed to reduce inflation and be seen to be best able to do that; he needed a credible agent and he needed a solution. The reelection motive explains the choice: Carter could not have been reelected without improving his approval rating through improved inflation performance.

2.4.5 Divided Government and Agency Independence

The 1980s saw the longest period of divided partisan control of Congress in nearly a century, and having a president whose party did not control at least one House persisted throughout the decade. Does this have implications for monetary policy? That is, is the Fed's latitude wider in a period of divided government, when the preferences of the president and Congress are less uniform? Generally, how does the number of principals and the heterogeneity of their preferences affect the Fed's freedom of action and policy stability?

Two principals can coordinate an agent's behavior the more closely if they share similar preferences. If two principals want different things, and cannot reach a stable bargain, even a closely controlled agent's behavior could display variability if he alternates between principals' preferences in choosing a course of action. But if two very different principals can bargain and agree to choose an agent whose own strong preferences reflect their bargaining outcome, even a highly independent agent's behavior will be stable. Add a third principal and the bargaining space may become more complex, but coordination still works the same way. For example, one principal (say the financial community) might have strong preferences for stability over volatility in markets but is relatively indifferent across levels of aggregate economic activity, while the others (president and Congress) might have strong preferences over economic activity but not volatility. However, they could still coordinate through bargaining and achieve stable policies by appointing someone who would strongly wish to carry out the bargaining outcome, as described above.

Hence, a lot seems to depend on the agent's nature, as well as the principals' preferences. Volcker was chosen to implement a counterinflation policy in full view of feelings in the administration that he was no team player and might indeed prove difficult to control. His strength of commitment to these outcomes meant that the transitions through a period of divided control of government did not matter much. Earlier in the period of unified party control, Carter had chosen as his Chairman G. William Miller, whom Greider describes as a "team player." He was not a successful chairman, possibly be-

cause his desire to be cooperative immobilized him in the face of conflicting goals and signals as inflation worsened. Policy might well have been even more inconsistent under a "team player" in a period of divided government.

In fact, splits over policy within the administration could have as much effect as divided party control of Congress. If the principal with reappointment power lacks clear goals, the agent may have more latitude.[21] The extensive policy disagreement in the Reagan administration between supply-siders—who felt the Fed's policy during the first experiment was too severe, frustrating the recovery—and monetarists had two related consequences. First, there was a lot of signaling from the administration, as Havrilesky's (1988) index shows. In fact, his index, a count of published calls for changes in monetary policy by members of the administration, predicts a small part of changes in money growth (about 3 percent of the variance) and is itself a function of economic conditions, like the congressional attention index.[22] But signaling is what you do when you have no direct control over policy. Greider also recounts the efforts Regan made to get Volcker out in 1982–83 and replace him with someone easier to deal with (presumably like Miller). Regan failed, apparently in the face of strong support for Volcker in the financial community. This makes Ben Friedman's suggestion (in this volume) that the financial community in the 1980s moved from supporting stability to preferring volatility in markets extremely interesting, since it would mean that by 1987 Volcker's position was no longer that of any of the principals, and he was not reappointed.

2.5 New Targets, Old Problems

2.5.1 International Origins

Those issues surround the domestic politics of monetary policy. The second experiment of the 1980s, reducing the dollar's exchange value, would require a whole new paper, which would cover many of the same subjects. For example, differences between Carter's multilateralism and Reagan's more unilateral approach to foreign policy would figure in the story. The economic policy coordination literature had ups and downs, initially optimistic about improving policy, later foundering on empirical findings of small benefits that evaporated completely once even a little uncertainty or the possibility of error was allowed for. And the Congress would certainly appear, particularly through the linking of international money and trade policy, since the real effects of high real exchange rates are generally felt most directly through the pressure they exert on exporting and import-competing sectors.

But was monetary policy, the actions of the Fed, different in this period? There was unprecedented international cooperation over at least the orchestration of policy, from the Plaza Hotel meeting and agreement in September 1985 through further sessions in Tokyo and Paris in 1986 and 1987. There were

regular meetings of the "Group of Seven," and other countries certainly altered their interest rates and fiscal policy to accommodate the dollar. There was a further flurry of activity after the stock market plunge of October 1987, but by 1988 the dollar was no longer so obviously overvalued, and American real interest rates, though still high and positive, were at least no longer higher than Germany's.[23]

It might be tempting to conclude from all this that international concerns became a major element of American monetary policy in this period, but I am doubtful. There was some intervention in exchange markets. *Fiscal* policy gestures were made about reducing the deficit. More important, the dollar's decline began in the spring (March or May, depending on choice of measurement) of 1985, months before the Plaza meeting. After the peak year for American real interest rates in 1984, there is a sharp reduction by 1985 which *does* reflect domestic policy: the target federal funds rate (that is, the center of the range that the FOMC now wrote into its directive) was lowered by two percentage points over the last two months of 1984, nine months before Plaza, and shortly before the dollar's decline began. The target was lowered by a point and a half in the summer of 1985 (*before* the Plaza meeting) and raised to its previous level again by September (see fig. 2.1). In fact, the federal funds rate itself hardly follows this downward blip: it is allowed to lie at the top of its range for a couple of months. This blip, like the reduction in 1984, may have been aimed at sending the dollar down, but it is quite clear that after 1985, the harmonization of real interest rates owes at least as much to increases in the German and Japanese rates as to reductions in the American rate. In fact, except for the brief blip in summer 1985—*before* the "coordination" got under way—the federal funds rate target range is constant from December 1984 to March 1986.

Nevertheless, speculatively, two political questions seem to be raised by this episode that deserve a *systematic* answer. First, exchange rates might have become a target of monetary policy at least for a while. Second, while real relative interest rate changes explain a lot about movements in the real dollar exchange rate, politics may have a role here too.

2.5.2 Moving targets

Interest rate stabilization was the goal of monetary policy, subject to periodic surges of partisan change and occasional other politically-motivated shocks. Woolley (1988a) estimates transitory shifts in policy weights on inflation and unemployment, with bursts of anti-inflationary policy in 1969 and 1979.[24] This (along with his failure to find a surge in the weight on anti-inflation policy in 1974–75) verifies systematically the interpretation of documentary evidence by Romer and Romer (1989).

Variations of both methods can be used to look at the question of exchange rates and interest rates, to see whether changing international conditions also produce changes in the goals pursued. Furlong (1989) lists the order in which

major targets were discussed in the FOMC directive as evidence of the priority they received in FOMC discussions. (The interpretation was originally made by former Fed Governor Robert Heller, so it has surface plausibility.) Exchange rates appear in spring 1985 (the first date for which data are provided), listed after the monetary aggregate, strength of expansion, inflation, and credit market conditions. Exchange rates reach center stage briefly in the spring of 1987 and recede in importance after the events of October 1987. Unfortunately, I could not reliably replicate Furlong's list from my reading of FOMC directives, so I cannot extend the data back before 1985.

More systematically, table 2.5 contains reaction function estimates for the federal funds rate, extending Woolley's (1988a) moving regressions for overlapping four-year periods from 1977–80 through 1986–89. The dependent variable is the federal funds rate. Independent variables include a lagged dependent variable to stabilize the results, and the possible targets of policy, the inflation rate, unemployment rate, change in industrial production, change in the dollar-deutschmark exchange rate, change in money supply M1, and level of nonborrowed reserves.[25]

These overlapping "moving" regressions imply that the federal funds rate responded only to inflation and money growth in the early years of the policy experiment, and then, after the peak of the recession, there is some systematic evidence of a response to unemployment (rates come down in the face of high unemployment), and rates are also lowered when nonborrowed reserves are highest. After the 1984 election, inflation reappears along with (not quite at conventional significance levels) the dollar-deutschmark exchange rate, at

Table 2.5 **Targets in Moving Regressions in the 1980s**

	Lagged Target of Policy and Expected Sign				
Years	Inflation Rate(+)	Unemployment Rate(−)	ΔDeutschmark Exchange Rate(+)	Nonborrowed Reserves(−)	ΔM1 Growth(+)
1977–80	*				*
1978–81					*
1979–82	*				*
1980–83				*	*
1981–84		*		*	*
1982–85		*		*	*
1983–86	*		(*)		
1984–87	*				
1985–88			(*)		
1986–89					

Note: The asterisk, *, indicates coefficient from reaction is statistically significant at .05 level with the expected sign. The asterisk in parentheses, (*), indicates significance at .1 level with the expected sign. Moving regressions were estimated over 48 months for the time periods shown. The dependent variable was the federal funds rate; its first lag was included and was always significant.

least intermittently. Thus it is conceivable that the federal funds rate was reacting to the exchange rate, but at most episodically and not very strongly. Any reaction to money growth disappears in the later years. None of this contradicts the Furlong-Heller data. The last two years were probably dominated by the aftermath of the stock market collapse, with the focus on credit market conditions explaining the absence of the usual targets from the reaction function.

2.5.3 Politics and the Demand for Dollars

Historically, real exchange rates and relative interest rates are related, but what determines the preference for dollars at a given combination of exchange and interest rates? That is, monetary policy was certainly looser in 1978, tighter in 1982, but would 1982 monetary policy in 1978 have produced the same strength in the dollar? If not, what is the role of politics in the difference?

Journalistic accounts of the strong dollar period abound with references to politics, and private conversations with investors suggest the importance to them of political stability. They seem to think about stability as the intersection of two separate components, stability of the world and stability of the United States, so:

	World	
U.S.	Stable	Unsettled
Stable	$ less strong	$ very strong
Unsettled	$ very weak	$ less weak

That is, when the world seems to be in trouble but the United States does not, the dollar is at its strongest; when conditions are reversed, the dollar is at its weakest. My guess is that a stable United States in a stable world produces a stronger dollar than weakness on both sides. But can this be measured and is there any evidence for it?

The United States looks most stable to investors when the approval or popularity of the president is strongest, allowing for the cycles that exist in popularity. Reagan's early term and short so-far incumbency of Bush have the strongest ratings. Reagan after 1986 is much weaker, and Carter after 1977 weaker still, though the lowest ratings of all are observed in the early 1970s. I have not yet systematically collected world stability data back into the 1970s, so the equation in table 2.6 has omitted variable bias.[26] The result is clearly interesting enough to merit continuing work. The real exchange rate partially adjusts to the current real interest differential between the dollar and the average of its trading partners, and also to the real level of the current account balance of payments. Independent of this, there is also a significant effect of the annual change in presidential approval. When this goes up, the real exchange rate goes up. I do not set too much store by this result, with all of 16 observations, but the general idea behind it—that is, to look for political

Table 2.6 Determinants of the Dollar's Surge and Decline

Independent Variable	Estimated Coefficient	Robust Standard Error	*t*-Statistic
Constant	29.3	22.7	1.3
Lagged real exchange rate	.69	.23	3.0
Interest rate differential	3.93	1.65	2.4
Real current balance of payments	10.9	5.06	2.2
Change in presidential approval	.47	.19	2.2
Observations	16		
Corrected R^2	.64		
Durbin-Watson statistic	2.22		

Note: Dependent variable was the U.S. real relative exchange rate. Data on exchange rates and interest rates is from *International Financial Statistics*, various issues. Balance of payments data is from Citibase. Popularity data is from King and Ragsdale (1986).

factors that influence market judgments about the relative values of currencies—seems worth following up.

2.6 Conclusions

The congressional choice of regulatory design produced an institution in which the demand for stable financial market conditions would normally be attended to, but in which both Congress and the president could have an influence on monetary policy. This agency framework, and particularly the interaction of the president's reelection motive and the Fed chairman's reappointment motive, provided incentives for pre-election monetary cycles to be weak and post-election cycles to be strong. Of course, big parts of the explanation of monetary policy lie in less systematically explored factors like the changing ideas of economists and changes in the structure of world financial markets. But even if each of the systematic political effects we discussed only explain a small part of the variation in outcomes, they cumulate: 5 per cent here, and 5 percent there, and pretty soon it starts to add up to a political model of monetary policy.

It is important to note that it is not a question of "Which model is right?" A focus on multiple principals instead points to several systematic incentives that exist simultaneously. Multiple principals means changing goals, and for the Fed it means partial independence and room for maneuver. Partial independence—that is, limited discretion for the Fed with the possibility of presidential control only at a cost to the president—is a solution to the "rules versus discretion" problem that economists have argued over for several years (Lohmann 1990). At least partial independence in the central bank is worth having, in terms of lower long-run inflation. Moreover, we have seen that Fed

policy has been quite consistent vis-à-vis its principals. In spite of the oft-alleged incentives it has to exploit its private information to engineer surprises, in fact it seems to follow a simple rule, namely, to smooth interest rates. It does a good job of it since the relevant principal, the financial community, is rarely vocal. Whether the Fed does what it says is harder to say, since money growth makes inconsistent appearances in Fed's reaction functions. Hence, it may have pursued a consistent policy, even if it has not consistently pursued the goals economists would have liked.

Bills are introduced in every Congress to make the Fed more accountable, and economists often suggest institutional reforms. Some suggestions reviewed by Clark (1989) include prompt announcement of FOMC decisions, compulsory publication of Fed budgets, annual publication of targets with presidential removal of the FOMC for failure to achieve them, adding the Secretary of the Treasury to the board and FOMC, and Senate approval of regional bank presidents. Prompt announcement *might* induce speculation, undercutting credit market stabilization without aiding any other principal, but of each of the others the same thing can be said. Add a power, aid in discovery, and reform strengthens the relevant principal. Hence each reform makes it more likely that the affected principal will get what he wants, rather than what the reformer wants. Let the president dismiss the FOMC and they will not only work to hit targets but choose ones the president wants. This (like putting the Treasury Secretary on the FOMC) will reinforce the existing partisan cycle and promote the "team player" Fed behavior characteristic of Miller's term as chairman. The empirical evidence on congressional behavior is inconclusive, so the effect of adding a congressional power is uncertain. Probably no amount of power and information would create a geographically redistributive "pork barrel" in credit allocation. If this cannot be done, which seems likely, then Congress will continue not to vote itself powers that have no electoral return, and the blame-shifting attention cycle will continue to characterize congressional involvement.

However, the reappointment-reelection cycle discussed above has important implications for the most popular current proposal for institutional reform. Meltzer (1989) concludes his review by suggesting that the president should be able to appoint the chairman upon taking office, in order to ensure cooperation with the president's program. This proposal featured prominently in the bill introduced in 1989 by Representative Lee Hamilton, chairman of the Joint Economic Committee. But we have seen that the agency relationship that exists produces strong incentives for the Fed to give the newly elected president what he wants, regardless of partisanship. Immediate appointment upon election would not necessarily add to this incentive.[27]

Paradoxically, it would change the pre-election incentives. Under the existing system, the chairman, not knowing who will win, has incentives to duck and leave existing policy intact. Under the proposed reform, a chairman can only try to keep his job by throwing everything into the president's reelection

effort since, if the incumbent loses, the chairman is out of a job no matter what he has done before the election. Hence incentives to run a pre-election monetary cycle, absent under the present system at least since monetary policy became broadly more visible, would reappear if the system were changed to allow the president immediately to appoint a new chairman. So the positive analysis of policy undertaken here turns out to have relevance for contemporary debates about the design of institutions, as well.

Notes

1. This paper ignores the activities of the Federal Reserve System in coordinating and regulating banking activities, restricting attention to the management of interest rates and money stock carried out by the Federal Open Market Committee, whose membership includes the appointed Board of Governors (including the chairman) of the Federal Reserve, as well as presidents of the regional banks. Good recent reviews of the institutional structure are available in Woolley (1984), Melton (1985), and Kettl (1986).

2. These positive questions complement normative discussions by economists on "What should the goals of monetary policy be?" and "Should there be discretion or should the Fed follow rules?"

3. Controversies abound over whether the Fed should have targeted total or nonborrowed reserves and have used lagged or current reserves accounting procedures (they changed to using current reserves in 1984).

4. According to congressional testimony of Treasury Undersecretary Sprinkel in July 1981, the annual growth rate of money M1B was supposed to decline by one percentage point per annum from seven in 1981 to three in 1985 (cited in Hibbs 1987, 287). The experiment was backed by the Administration: the 1982 *Report* of the Council of Economic Advisers (republished in Tobin and Weidenbaum 1988) gave a central role to reducing inflation, which it described as "essentially a monetary phenomenon" (54).

5. By early 1982, M1 was growing more slowly than the overall level of prices. This "real" contraction is reflected in the severity of the recession induced by the policy experiment.

6. "Implausibly optimistic" is Hibbs's (1987) phrase; the "economics of joy" is what Stein (1988) calls it. The optimism conjoined the monetarist belief in the possibility of a painless adjustment to lower inflation rates through the change in inflationary expectations upon announcement of a simple and credible anti-inflation policy and the hoped-for "supply-side" effects on investment and output of lower marginal tax rates.

7. The *Report* projected real personal disposable income; table 2.1 gives the outturn in per capita terms. Population growth slows in the 1980s, making per capita growth performance look better compared to earlier decades, but the change in the projections into per capita terms would have only minimal effects.

8. Net investment would be below trend except for a surge in housing-related investment in the mid-1980s. Extrapolations are polynomial trends fitted to the investment series in unlogged constant-price form.

9. "Real" means the dollar exchange rate vis-à-vis the currencies of the U.S. trading partners, weighted by trade volume, net of their relative price levels. This netting out

of relative inflation removes from the chart that part of changes in nominal exchange rates that offset international inflation differentials.

10. Woolley (1984, chap. 5) relates economists' academic backgrounds to policy ideas. Gildea (1987) suggests that members of the Board of Governors have backgrounds that affect their propensity to dissent from FOMC decisions.

11. In February 1986, Volcker's opposition to easing was overruled by a majority, including several other Reagan appointees. This episode emphasizes the division over economic policy that existed in that administration.

12. Belden (1989) shows that this finding continues to hold and also relates dissent to the different personalities of the chairmen and the extent of uncertainty about the economy.

13. See, e.g., the Republican threat to introduce a windfall tax on high interest rates in 1982.

14. Grier (1988) proposes that the changes of chairs in the Congress from Patman to Reuss and Sparkman to Proxmire (both of whom were at the opposite—liberal—end of the ideological spectrum from their predecessors) in the mid-1970s and Reuss's introduction of HR212 in spring 1975 were sufficient to persuade the Fed to lower interest rates. This would be an important observation, since the next big change would be expected when the Republicans gain the Senate in 1980, an event that coincides with the change in presidential control, but the implication that Patman was less in favor of low interest rates than Reuss is troubling.

15. The regression controls for odd and even numbered years, since more bills are introduced in the first year of congressional sessions, more than the difference in volume of business in the two years.

16. Havrilesky (1987) proposes a theoretical unification in which monetary surprises provide real stimuli to raise revenue to pay for other redistributive policies, but he gives little evidence in support.

17. This assumes that the chairman dominates FOMC voting, an assumption for which there is evidence, but oversimplifies in ignoring the role of other advisors in the chairman's appointment.

18. Output rises and falls in the second year after the election (Alesina and Sachs 1988), so systematic money growth changes in that year (for which there is no evidence) would reflect accommodation.

19. Volcker held off easing to end the recession longer than someone trying to curry favor for reappointment would have, but he enjoyed tremendous support in the financial community. Again, it seems that first actions speak loudest.

20. Presidential approval is increased by a half point for each percentage point of belief that his party is best able to handle the most important problem; each point of inflation takes two points off approval.

21. In fact, the chairman should worry more about the president than Congress, since he is appointed by the president without Senate consent, while amending the Federal Reserve Act without the president's approval would require a supermajority in Congress.

22. Administration calls for policy could induce changes in private demand for money which the Fed may accomodate by smoothing interest rates. Havrilesky does not test for this.

23. Recently, the G-7 agreement not to coordinate policy to alter the value of the yen was taken as further evidence that while the dollar was everyone's problem, the yen was Japan's.

24. He uses Brown, Durbin, and Evans's (1975) method of moving regressions, in which the same regression is run over successive overlapping time periods in order to investigate shifts in the coefficients.

25. The targets for the federal funds rate in FOMC directives could appear on the right-hand side here, too, but those targets accommodate changes in the rate, whose behavior I analyze directly. Each new regression drops the first year of the previous one and adds an extra year at the end. Monthly observations are used.

26. To generate a quantitative indicator of sentiment about world stability, one could use a measure of conflict or subjectively turn to the annual responses to the Gallup International survey ("Will the next year be one of peace or of conflict?") carried out in countries that are financial centers. Responses to this survey trend upward in the later 1980s, so dollar demand, ceteris paribus, should be considerably weaker than in the earlier part of the decade, when the world was widely seen as more unstable.

27. Clark (1989) quotes Jerry Jordan as recommending the appointment take place a year after the president takes office. This would seem to be the most dangerous idea of them all, since a partisan chairman would now have clear incentives to run *both* the pre-election and post-election cycles in policy.

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Comment

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The centerpiece of James Alt's thoughtful analysis of U.S. monetary policy is his representation of the Federal Reserve System as an agent simultaneously serving three principals: the president, Congress, and the private financial markets. As is standard in principal-agent models, the objectives governing the behavior of the agent here are not merely to satisfy the objectives of the principal. Alt posits that Federal Reserve policymakers—including especially the chairman—also act so as to maximize prospects for reappointment when their terms expire. In addition to this specification of the familiar tension between the objectives of the principal and those of the agent, however, Alt's multiprincipal model opens up another dimension of conflict. No one expects the president and Congress to agree at all times on the proper course of monetary policy, and the introduction of "the market" as yet a third principal only complicates matters further. The resulting framework for studying monetary policy is so rich with possibilities that it is surely no criticism of Alt to say that many of its potential implications remain to be explored.

In order to reach a model with so much potential richness, Alt must rely on many simplifying assumptions, some of which warrant closer inspection than he provides in his paper. Perhaps the most obvious of these is that entities like Congress or the financial markets—or even the president—have clearly de-

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fined objectives that monetary policymakers can either seek to achieve or not. As Alt is well aware, modeling Congress in this way sidesteps a long-standing and voluminous body of thinking, ranging from the popular to the professional, which analyzes the complexities of an institution made up of representatives of different political parties, different geographical regions, and different economic constituencies. Similarly, although in principal "the president" is a single individual, in practice the administration that the president heads also typically reflects at least some diversity of constituencies. As the example of the open conflict between "monetarists" and "supply-siders" in the Reagan administration clearly demonstrated, the resulting differences of opinion within the administration can and do bear quite directly on objectives for monetary policy. Imputing any very unified set of monetary policy objectives to participants in the private financial markets is likewise problematic.

The ability to attribute unambiguous objectives to each of the three principals in Alt's model is not a mere nicety, but a central assumption underlying the model's capacity to generate testable implications. For example, one half of Alt's conclusion about how political forces influence monetary policy is that, in the period following a presidential election, the Federal Reserve tends to deliver the monetary policy that the new president wants. (The other half is that in the period leading up to a presidential election, the Federal Reserve tends to steer a neutral course.) In the 1980 election campaign, candidate Ronald Reagan harshly criticized the stagnation of U.S. economic activity and placed major emphasis on the need to create new jobs. But Mr. Reagan was just as critical of the current double-digit price inflation. Nor did the intramural monetarists-versus-supply-siders debate clarify the issue once the new administration had taken office. Unless the Federal Reserve was operating under an economic model promising disinflation without recession—something that neither the central bank's internal discussions at the time nor subsequent experience indicates is likely—how was Paul Volcker to know whether the tight monetary policy that the Federal Reserve imposed in 1981 and the first half of 1982 was what the new president wanted? From the perspective of scholarly inquiry, how is the economist or political scientist to treat this observation in submitting Alt's model to empirical verification?

A second central assumption of Alt's model is that the private objective governing the behavior of Federal Reserve policymakers (again, especially the chairman) in their capacity as agent is the desire for reappointment. The role of this objective is to motivate the central bankers not only to give a newly elected or reelected president the monetary policy he wants, but also to steer a neutral course in advance of the election so as not to risk alienating whichever candidate wins.

This assumption too bears closer inspection. To begin, the institutional facts describing the job tenure of Federal Reserve Board members and Federal Reserve Bank presidents, both of whom serve on the Federal Open Market Committee, render this hypothesized objective implausible except in the case

of the chairman. The bank presidents are formally appointed by the boards of directors of their respective Federal Reserve Banks. Although input from Washington is often important in the initial appointment of a new bank president, it is typically not a factor in reappointment of an incumbent bank president to successive terms (which last five years). Each Board member is appointed either for a full term of 14 years or for the unexpired portion of a currently running 14-year term. A member who has served for a full term is ineligible for reappointment. A member initially appointed to serve out an unexpired term is eligible for reappointment to one full term, but the very fact that so many Board appointments are to fill out unexpired terms indicates that many Board members not only do not seek reappointment but, in contrast, choose to leave well before they have to. The average tenure of Federal Reserve Board members appointed during the last three decades (not including those still in office as of the time of writing) has been less than six years.

More important, it is not clear what implication of this key element in Alt's principal-agent model provides a handle for empirically testing it. Even if one were able to document beyond doubt that the Federal Reserve adjusts monetary policy after each election to conform to the new president's wishes, the counterexample of the U.S. Supreme Court—which reportedly "follows the election returns" despite the justices' life appointments—shows that such a finding would not be strong evidence of a reappointment objective.

What alternative objective might motivate the behavior of the Federal Reserve in this principal-agent setting? One alternative that would be familiar to observers of many governmental agencies is that Federal Reserve officials attach great importance to preserving or even enhancing the position of the Federal Reserve as an institution. In the specific case of the Federal Reserve System in recent decades, this institutional objective has usually taken the form of seeking to protect the central bank's independence: independence from direct intervention by the administration in monetary policy decisions (e.g., by putting the Secretary of the Treasury on the FOMC, as was the case until 1936), independence from "excessive" congressional interference, independence from GAO budget audits, and so on. (To be sure, it is possible to attribute such institutional objectives to private motives too, but presumably those would not include the desire for reappointment.)

What kind of principal-agent model might this alternative objective for Federal Reserve policymakers generate? I have suggested elsewhere that the effective scope for independent monetary policymaking by the central bank in the United States is bounded on one side by the monetary policy sought by the administration and on the other side by that sought by Congress (again, as if these two entities had unambiguous objectives). When the president and the dominant forces in Congress differ sharply about monetary policy, the Federal Reserve has much room for genuine choice, and U.S. monetary policy becomes independent in reality as well as in theory. By contrast, when the president and the relevant consensus within Congress are in agreement about the

proper course for monetary policy, the Federal Reserve has little choice but to deliver the policy that these two principals deem appropriate. As is consistent with Alt's discussion of "divided government and agency independence," therefore, this model implies that the available range within which the Federal Reserve makes monetary policy is at times fairly wide, but at other times quite narrow. In this case the effective threat constraining the Federal Reserve to keep monetary policy within this range is that the president and Congress—acting *together*—have the power to amend the Federal Reserve Act, and therefore alter the Federal Reserve's internal structure as well as its relationship to other parts of the government, in whatever way they choose. This discussion is not the place to carry out a comparative evaluation of this alternative model and Alt's; the point of the example is merely to show that other, very different models are equally plausible a priori.

A further important consideration that does not appear explicitly in Alt's paper, but that is entirely compatible with his model (or with my suggested alternative), is that the desire to avoid financial crises has traditionally been an overriding concern of monetary policymakers, one at least on a par with the macroeconomic objectives that Alt discusses. After all, the Federal Reserve itself grew out of the reaction to the series of banking panics that had so disrupted not only the financial markets but U.S. economic activity more generally in the late nineteenth and early twentieth centuries, and the original Federal Reserve Act was explicit that the new institution's chief charge was to avoid such episodes. Further, as Hyman Minsky has persuasively argued, the subsequent decentralization of lender-of-last-resort responsibilities in the 1930s (importantly including creation of the Federal Deposit Insurance Corporation) stemmed in large part from the recognition that the Federal Reserve had failed to protect the nation from just such a crisis following the collapse of Credit-Anstalt in May 1931.

Indeed, the desire of Federal Reserve officials to avoid a financial crisis fits easily into almost any principal-agent representation of the monetary policymaking process. In the context of Alt's model based on a reappointment objective, a Federal Reserve chairman who had allowed a financial crisis to occur "on his watch" might well anticipate sharply reduced prospects for reappointment. In the context of my suggested alternative based on an institutional-independence objective, a financial crisis might easily precipitate another devolution of Federal Reserve responsibilities or even a wholesale restructuring of the institution. Moreover, there is no reason to suppose that avoiding a financial crisis is merely an objective of Federal Reserve policymakers in their role as agents acting for other principals. No doubt the president and Congress care about such matters as well. So do private participants in the financial markets.

The role of the financial markets as yet a third principal in this interaction is one of the potentially most interesting aspects of Alt's model. Unfortunately, however, it is far from obvious what "the market" would like the Fed-

eral Reserve to do. Part of the problem is the great heterogeneity that has traditionally characterized the U.S. financial system. Commercial banks, investment banks, brokerage firms, securities dealers, thrift institutions, insurance companies, pension funds, and money management firms need not—and do not—share identical objectives. The challenge is to draw generalizations that are useful in the context of a principal-agent model of monetary policy.

Alt assumes that "the market" wants the central bank to provide a financial environment characterized by stable interest rates. But apart from sharing in the common desire to avoid a financial crisis, do market participants really seek interest rate stability? Especially in light of changes in the structure of the U.S. financial markets over the past two decades, interest rate stability is less likely to be a desideratum of professional market participants than may once have been the case.

Earlier in the postwar period, the prevailing market structure, in which the yield curve was generally upward sloping and in which highly creditworthy corporate borrowers often relied on commercial banks for a major part of their credit needs, provided both banks and securities firms with ready profit opportunities with relatively modest risk. Securities firms made profits, on average over time, by borrowing at short term and positioning longer-maturity securities. Banks made profits by issuing deposits (or deposit-like instruments) and lending to commercial, industrial, or other high-quality borrowers. Interest rate volatility merely added unwanted risk.

More recently, however, the yield curve is less reliably upward sloping, and highly creditworthy corporations turn to the commercial paper market far more than to the banking system when they need to borrow. One result of these changes in the market environment is that both banks and securities firms have had to seek out other—typically more risky—profit opportunities: for example, banks' lending to developing countries and financing leveraged buy outs and securities firms' issuing junk bonds and making bridge loans. Another result has been the increasing predominance of a trading mentality, in which interest-rate volatility represents not so much an unwelcome risk as a badly needed profit opportunity. Alt's idea of representing the Federal Reserve as also responsive to "the markets" in a principal-agent setting is intriguing, but further thought is necessary to establish what objective to attribute to this third principal.

A final reservation about Alt's analysis in this paper arises not from the specification of his model but from his approach to testing it empirically. As in much work in this area, Alt represents actual monetary policy outcomes by the growth rate of the money stock (here M2). But there has always been doubt about whether observed money growth in fact reflects deliberate Federal Reserve policy choices, and developments in the 1980s have increased grounds for doubt along these lines.

Indeed, since 1980 the relationship between money growth and the growth of either income or prices in the United States has collapsed to such an extent

that there is little reason why the Federal Reserve *should* have relied on monetary targets for monetary policy. As Kenneth Kuttner and I have shown, data since 1970 provide no evidence that fluctuations in any of the familiar monetary aggregates contain information that is useful for predicting subsequent fluctuations in either nominal or real income. Further, because the mid-1980s brought both the fastest money growth of the postwar period and the greatest *dis*inflation, the correlation between money growth and price inflation calculated in the way recommended by Milton Friedman (using two-year averages to smooth out short-run irregularities, and a two-year lag between the money growth and the inflation) is now *negative* for postwar data samples including this decade.

In light of these developments, it is hardly surprising that many observers no longer think that the Federal Reserve places much emphasis on money-growth targets in planning and carrying out U.S. monetary policy. If money growth no longer occupies a central role in the monetary policy process, then tests that rely on the growth of some monetary aggregate to measure the stance of monetary policy are unlikely to provide a valid test of an underlying model of Federal Reserve behavior.