

The Strategy of Monetary Policy

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Monetary policy is much in the news these days. It seems it always has been as long as I've been at the Fed. But lately it's not because of anything we've done; monetary policy has done nothing since February 1st. Rather, what's changed dramatically is the market chatter and speculation about what the Fed might do in the near term future. I'm afraid the speculation changes more often--and more dramatically--than the policy.

So, today, I'd like to turn away from the fixation on the Fed's short-run tactics and talk more generally about the strategy of monetary policy. Specifically, I'd like to address three questions. First, what are the goals and objectives of monetary policy--what is it trying to accomplish, and why? Second, what are the instruments at our disposal in achieving those goals, and why do we choose the ones we choose? And finally, but importantly, how and when do we use those instruments. That's the timing of monetary policy, by which I mean something bigger than tactics but smaller than strategy. In the process of talking about those three issues, I will touch upon several controversial questions about monetary policy. These are live questions, not dead ones.

I. The Goals of Monetary Policy

Let me start with the goals. The Federal Reserve frequently is said to be an "independent" agency. And it is an independent agency; this is very important to our effectiveness. But people often misunderstand what independence means. The independence of

the Fed means, to me, two things. First, that we have very broad latitude to pursue our goals as we see fit; we decide what to do in pursuit of those goals.

Second, it means that once our monetary policy decisions are made, they cannot be reversed by anybody in the U.S. government--except under extreme circumstances. (Congress would have to pass a law limiting the power of the Fed.) But although we are free to choose the means by which we achieve our goals, the goals themselves are given to us by statute, by the U.S. Congress. And that is how it should be in a democracy. Congress writes the goals into the Federal Reserve Act and directs us to pursue those goals, giving us quite broad latitude in how to do it.

What are those goals? The Federal Reserve Act tells us to pursue both "maximum employment" and "stable prices." There has been considerable controversy--and it's flaring up again now--over the dual objectives of maximum employment and stable prices.¹ On the one hand, some have been criticizing the Fed over the last 16 months for tightening monetary policy to fight an inflation that some people say doesn't exist. Waving swords at dragons, so to speak. On the other hand, there are those who would like us to focus entirely on only one objective--fighting inflation--and forget about employment altogether. To do that, of course, the law would have to be changed.

¹Actually, the Act specifies a third goal--"moderate long-term interest rates"--but this is likely a corollary of price stability.

This issue is controversial. My personal view is that a dual objective is not only feasible but desirable. The Federal Reserve is the ultimate determinant of the average level of prices in the economy; that is our proper, overriding, long-term goal. But monetary policy does affect employment in the short run (an important qualifying phrase), and Americans do care about gyrations in employment. If they didn't, nobody would fret much about recessions--which are, after all, transitory events. So, to me, the conclusion follows readily: We control an instrument that influences employment in the short run; Americans care deeply about employment; and it is therefore appropriate for Congress to order the Federal Reserve to pay attention to employment, too.

Furthermore, and importantly, the two goals do not conflict in the long run because the long-run effects of monetary policy on employment are negligible. In the long run, the very nature of our economy means that only the price-stability goal can be operative. But in the short run, both objectives can be--and in my view, should be--operative. However, I caution you again that this is a controversial issue and there are people who would argue the other side.

Now these two objectives--maximum employment and stable prices--are not well-defined goals. They are not the equivalent as telling a truck driver: Go out in the truck and drive from Minneapolis to Chicago at 57.5 miles per hour. The instructions we have from Congress are much vaguer than that. So how do we

make them more concrete? This is another aspect of the independence of the Fed: We must interpret what those phrases mean.

I personally interpret "maximum employment" to mean that we should try to hold the unemployment rate as low as possible without pushing it below what economists call the natural rate or the full-employment rate. Why stop there? Why not push the unemployment rate lower still? After all, if we are pursuing maximum employment, we still haven't achieved it at a natural rate of between 5.5 and 6 percent. The answer is that pushing unemployment below that level would cause inflation to rise and thereby run afoul of our other objective--stable prices, which is our only objective in the long run.

That second objective--stable prices--also is not well defined. Congress has not told us to hold the Consumer Price Index (CPI) at 0.0 percent growth, nor to target the Producer Price Index, nor the GDP deflator, nor to pursue any other number. So what does "stable prices" mean? I think there is a strong consensus that it does not mean literally hitting zero in the measured CPI inflation rate because there are well-known biases in the index, biases that convince most scholars that increases in the true cost of living are smaller than measured increases in the CPI. How much smaller is extremely controversial, and nobody has a really good fix on it. But virtually everyone who has thought about this matter at all deeply believes there is some upward bias in the CPI.

So we should be shooting not for literally zero inflation in the CPI, but for something like zero "true" inflation, whatever that means numerically. The definition I've long used for price stability is a situation where ordinary people in their ordinary course of business are not thinking and worrying about inflation. As you well know, back in the late 1970s and early 1980s everybody in business in America was thinking about inflation. Now people are thinking about inflation a lot less. Some are; but I think a fair assessment must be that we are now close to functional price stability, though probably not quite there yet. The point of the Federal Reserve Act assigning us the goal of price stability is that, until we reach that objective--wherever it is, inflation should be kept on a long-run downward track. To me, that is the operational meaning of the goal of price stability right now. This does not mean that inflation every year must be lower than the year before, but it does mean that the trend should be downward.

In that regard, Figure 1, a graph of the rate of change of the consumer price index in the U.S. from 1960 to 1994, is instructive. The solid line is the change in the consumer price index stripped of its food and energy components--the so-called "core" inflation rate. The thin line is the change in the overall consumer price index, including food and energy prices. Looking at this graph, by the way, tells you why economists focus on the core CPI. Over long periods of time, they tell you exactly the same thing. But over short periods, the CPI, because

of its very volatile food and energy prices, bounces around in a way that sometimes causes confusion.

The message of this chart is simple. For about 14 years, from 1966 to 1980, inflation trended upward. There were plenty of gyrations, with a peak in the Vietnam war period (1966-69), then a fall during the price controls of the Nixon administration (1971-73), then a surge in late 1973 when OPEC hit the first time, and so on. But the broad historical story from 1966 to 1980 is one of rising inflation, which is to say that the Federal Reserve was failing to meet its goal of promoting price stability. I should point out that that was not the only thing that was going wrong in this period, and nobody should put the entire blame on the Federal Reserve. But part of the blame must be on the Federal Reserve, for it was our statutory responsibility and it was not met.

Then from 1980 to 1994--another period of 14 years--you see a clear success story. Inflation started above 13 percent and then tumbled down (excluding an aberration in 1983) to about 4-1/2 percent, where it lingered from about 1984 to about 1990, before rising a little and then falling again. But the capsule history of the period from 1980 to now is clearly one of falling inflation. That signifies the success of the Federal Reserve's anti-inflation policy--almost a complete reversal of the previous period's failure. We are now almost--but not quite--back to the inflation rates of the early and mid 1960s.

II. The Instruments of Monetary Policy

So those are goals of Federal Reserve policy: Maximize employment, which I interpret as holding the unemployment rate as low as you can without going beyond the natural rate, and keep inflation on a downward track until you achieve price stability. How do we try to do this? What are the instruments?

Fundamentally, the Federal Reserve controls only one thing. That's a sobering thought, actually, when you think about how much attention is paid to the Federal Reserve throughout the financial world. But we control only one thing: the volume of bank reserves held by U.S. banks. We have a few other small weapons, but that's the only important one we have. To control bank reserves, we buy or sell Treasury bills in the open market, thereby either taking reserves away from banks or giving banks reserves. On that, there is basically no choice.

Where we have a choice is the following. If we want, we can use this one instrument to control some measure of the money supply--M1, M2, or any other M that we can invent. (And, indeed, in the 1970s the Fed did just that by creating many measures of money.) We can control any measure of the money supply, although somewhat imprecisely, for there is no meaningful definition of money that we can control with perfect precision. Nonetheless, within some tolerable limits, we can control any monetary aggregate--except when things go badly wrong. Alternatively, we can control short-term interest rates with very great precision--especially the federal funds rate, which is the rate banks pay to

borrow reserves overnight. That's the choice. We can target bank reserves; we can target some definition of the money stock; or we can target short-term interest rates, especially the federal funds rate. But, whatever we do, we have just one instrument.

Let me make a small digression at this point. There is a common error, repeated time and time again even by people who are presumably knowledgeable about the subject, that because the Federal Reserve only has one instrument at its disposal, it can pursue only one goal. This is simply wrong.

Suppose someone told you that you have a budget of \$100 per week, and you are to pursue two goals: clothe yourself and feed yourself. Is there anybody that thinks it is impossible to further both those goals? As everybody knows, you would take your \$100 and balance the two goals by spending some of it on clothes and some on food. Your actual choice would depend on the terms of the tradeoff--that is, the prices of food and clothing--and on how you value the two goods. Of course, you can't spend your entire \$100 on food and then spend it again on clothing.

Similarly, the Federal Reserve has one instrument and two short-term goals, and we must trade off one goal against the other. The terms of the short-run tradeoff between furthering the employment goal and furthering the price-stability goal is called the "Phillips curve." Together with the Phillips curve, judgments about the relative importance of the two goals--in the

short run--lead to decisions. Of course, the Fed's problem in the long run does differ from the problem faced by a consumer deciding how to spend \$100. In the long run, we can only affect inflation, which is an important aspect of this problem. But it does not mean that we can't pursue two goals in the short run.

Having made that digression, let me return to the main theme. I've said that the Fed has one instrument--be it reserves, money, or a short-term rate of interest. Which choice is best? This is a very long-running controversy of monetary theory and policy. At various times in the last 30 years or so, the Fed has done each of those. There are periods when it has focused on bank reserves, on various definitions of money, and on short-term interest rates. That already suggests that there may not be one obviously correct answer for all places and times.

In the not-too-recent past, the Federal Reserve has targeted money growth rates. And I think that, if a strategy like that were workable, there would be real advantages to it. I see two.

First, it is often said that the money supply, being tied to the price level in the long run, provides the economy with a "nominal anchor"--the assurance that the price level will not just run away from us, either up or down (though the usual concern is up). Money potentially gives us a long-run anchor on the price level in a way that interest rates do not.

Second, and getting a little ahead of a point I want to make later about the lags in monetary policy, if a money-targeting strategy actually works, you get a preview of the subsequent

effects of monetary policy pretty quickly. Not long after the Federal Reserve moves bank reserves, we see the effect on the money supply. And, if that was a reliable guide to the ultimate effects on the economy, it would provide a valuable preview of where we are going. It's like seeing the ninth inning of a baseball game while you're still in the first inning.

Unfortunately, in recent years the relationship between the various measures of the money supply--pick any one of them--and things that really matter to us, like inflation and employment, has pretty much disappeared. As a result of that, the Fed has essentially abandoned any focus at all on any of the monetary aggregates, and moved to short-term interest rates. That was by necessity, not choice. The money targeting rule was simply not going to work, and there really was no alternative. So that left short-term interest rates, specifically the federal funds rate.

III. Lags in Monetary Policy

That brings me to the last, and quite important, aspect of strategy--the timing of monetary policy. The simplest statement to make about the lags in monetary policy is: They are long. If you remember that one thing, you've gone a long way toward understanding the actual implementation of monetary policy.

Figure 2 shows one estimate of these lags. I want to emphasize that it is only one estimate out of many models we maintain at the Federal Reserve. In the private sector, in the universities, and so on there are many more models. They don't all give the same answer; but, qualitatively, almost all look

pretty much like this chart. It shows the estimated effect of a specific tightening of monetary policy: a 1 percentage point increase in the federal funds rate, maintained for two years and then taken away. The upper panel shows the effect on the level of GDP, and the lower panel shows the effect on inflation as measured by the CPI.

Looking first at the top panel, the tighter monetary policy starts to have some effect on GDP right away, but it is very small. Then the effect builds, with the peak effect occurring between eight and twelve quarters out. Then the effect starts to dissipate, and about twenty quarters--five years--after the tightening of monetary policy there is essentially no trace left on GDP. That's what I meant earlier when I said that we do not have any effect on employment in the long run. Again, I should emphasize that this is the result from one particular model, and others will give answers that are quantitatively different but qualitatively similar.

Look now at the second panel, which shows the effect of a monetary tightening on inflation. If there were no effect on inflation, of course, the Federal Reserve would never tighten policy. For about six quarters or so, there is essentially no effect on inflation. But then the effect starts to build, and it peaks, in this model, after about 14 or 15 quarters--3-1/2 to 4 years! That's a long time. In particular, notice that it comes after the peak effect on GDP. So the lag from monetary policy to

output (or employment) is very long, and the lag to inflation is even longer.

Why should this process take so long in a flexible market economy? After all, we communicate our actions to the money market immediately, and short-term interest rates move within minutes, if not seconds. So why should the effects of monetary policy take so long to reach the economy? Well, part of the answer is that some of it does hit right away. But not much. The long lags start to make sense if you think about the main channels through which Federal Reserve policy works.

Higher interest rates have their biggest effects on housing, on consumer durables like automobiles, and on business investment in equipment and factories. Think about the channels that have to be followed after the federal funds rate moves. First, nobody except banks care about the federal funds rate per se. That rate has to affect interest rates that matter to people or to businesses--like rates for home mortgages, automobile loans, and corporate bonds. That reaction can take a while, although sometimes it happens quite fast, as in 1994.

Second, people must react to changes in interest rates; and, on most days, most people are doing something other than thinking about interest rates. Consumers have other things to do with their lives, and business people have other things to do with their businesses. They have personnel decisions, things to buy, things to sell, and so on. But, at some point, interest rate increases get to be front and center in their minds, and they

begin to think about changing their plans. They may think about that a short time or a long time.

Third, if they decide to change their plans, they must give instructions and have those instructions executed. In a small business, that happens fairly quickly. But in a big business it may take a long time. They have layers of management and committees which must give concrete content to the phrase: "we want to change our plans." And finally, in many cases, there is a further lag between the time of execution of the plan and actual expenditures. Suppose lower interest rates induce a company to decide to build a new factory. Well, that could take two years, and for the first six months very little money will be spent. So, for all of these reasons, there are long lags, and the strongest effects on the economy may not be felt until one, two, or even three years after the monetary policy action.

These long lags have very important implications for the strategy of monetary policy. Most obviously, to make any kind of intelligent decision today, we need some sort of picture of the state of the economy one, two, and three years ahead--no matter how indistinct. How do you get such a picture? First of all, you need forecasts of where the economy would be with unchanged policy. Second, you need some sort of a theory of cause and effect, a theory that says: If the Fed does this, then these things will happen. Third, you need some statistical evidence to fill the theory with numbers. It is not enough to say: If we

raise the federal funds rate, GDP growth will slow. How much? When? A theory doesn't answer questions like that.

Hazards lurk in all of these things--forecasts, theory, and statistical evidence. Forecasts are not very good. They are at best mediocre when you look one year ahead, and they are not very good at all further ahead than that. So we really don't have the kind of forecasting accuracy that we would like.

Second, the theories of monetary policy are not that strong, and are much in dispute. Economics is not physics. And I don't even mean sophisticated physics, where they argue about esoteric theories; I mean simple Newtonian physics. We simply do not have theories as tight as physicists do.

Finally, the statistical evidence is much weaker than we would like. Lots of people might dispute the graphs I've shown in Figure 2, and many could produce a model with different numbers. Nobody really knows whose numbers are correct. Furthermore, monetary policy is not like pressing a fixed sequence of keys on your computer, which will give you the same outcome every single time. The graphs I've shown you represent a statistical average over a long period of history. Some monetary policy episodes had bigger effects and some had smaller, and there is no way of knowing whether the next episode will have an effect larger or smaller than average.

IV. What to do?

So what is a poor central banker to do? When you look at this set of difficulties--forecasts are not very good, theories

and statistical evidence are much in dispute--it is tempting to say: Why don't we just wait and see what happens? If inflation starts rising, hit the economy with higher interest rates. If unemployment starts rising, do the reverse. I call this the Bunker Hill strategy: Wait until you see the whites of their eyes and then fire. Why don't we do that?

The answer is very simple: The Bunker Hill strategy will fail. It is sure to lead you into error because, by the time you see the whites of their eyes, they've already shot you right through the heart. The graphs we just saw show that it takes one to two years until policy has a large effect on output and two to three years until it has a large effect on the inflation rate. If the whites of their eyes are showing inflation, you're about two and a half years too late. And if those whites are showing unemployment, you're about one and a half years too late.

To have any hope for success in monetary policy, you need to act preemptively against either a rise in inflation or rising unemployment. Instead of using the Bunker Hill strategy, we must use what I call the "stitch in time" strategy. You try to save nine by stitching in time, in either direction.

Unfortunately, actually to use such a strategy in practice, you have to use forecasts, knowing that they may be wrong. You have to base your thinking on some kind of a monetary theory, even though that theory might be wrong. And you have to attach numbers to the theory, knowing that your numbers might be wrong, and that all you've got is a statistical average anyway. We at

the Fed have all these fallible tools, and no choice but to use them. It's a tough world, but that's the way it is.

What can you do to try to guard against failure? There are two principles that monetary policy makers need to keep in mind. First of all, be cautious. Don't oversteer the ship. If you yank the steering wheel really hard, a year later you may find yourself on the rocks.

Second, you must have a long-run strategy in mind. The Federal Open Market Committee meets eight times a year. You can't be thinking only about what's going to happen in the next six or seven weeks; that's basically irrelevant to the monetary policy decision. You must think about a long-term strategy, execute the first step of that strategy, and then watch. You must be flexible and prepared to modify or even abandon your strategy if things look to be going wrong.

People often misunderstand and think that we can't have a long-run strategy because of all these uncertainties and because the world is constantly changing. That is quite wrong. You must have a long-run strategy, but you must be willing to modify it as new information becomes available. Can this stitch-in-time strategy lead you into error anyway? You bet it can! But the other strategy--the Bunker Hill strategy--is sure to lead you into error. And that makes it, to me, a very easy choice.

Consumer Price Index

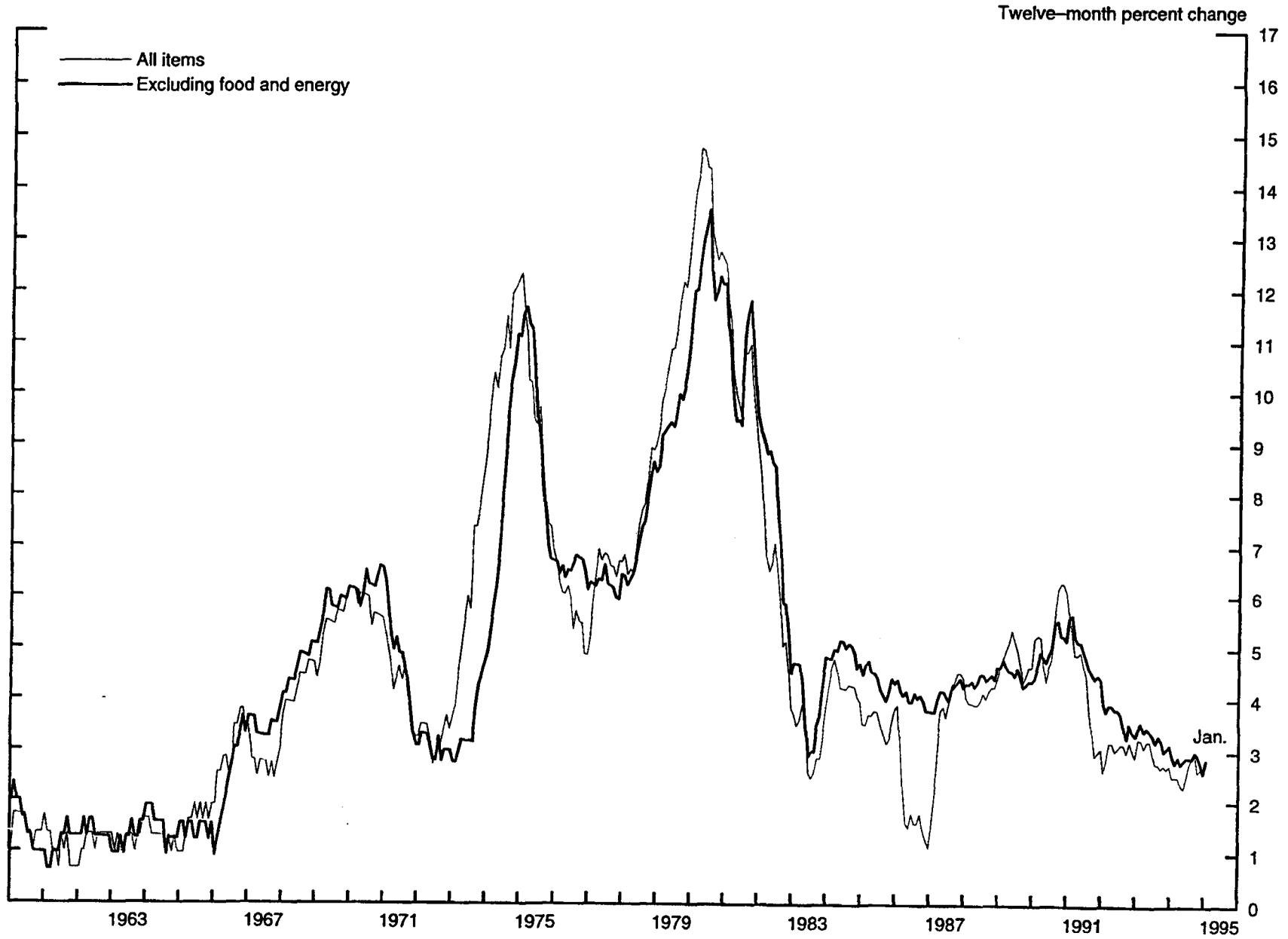
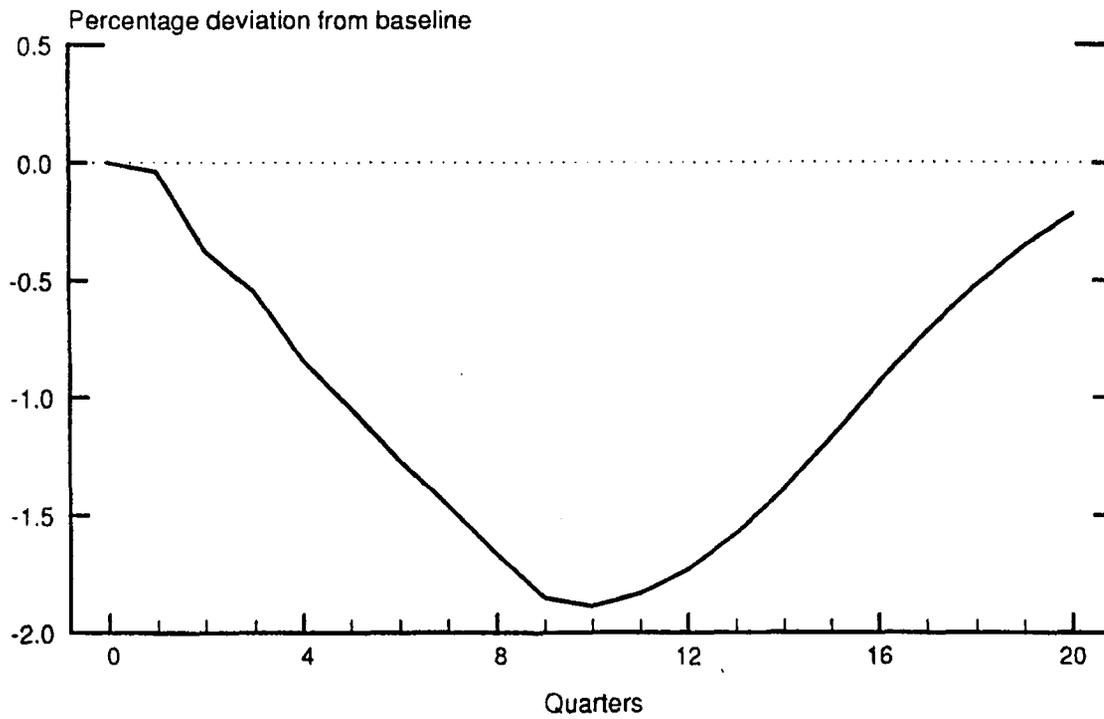


Figure 1

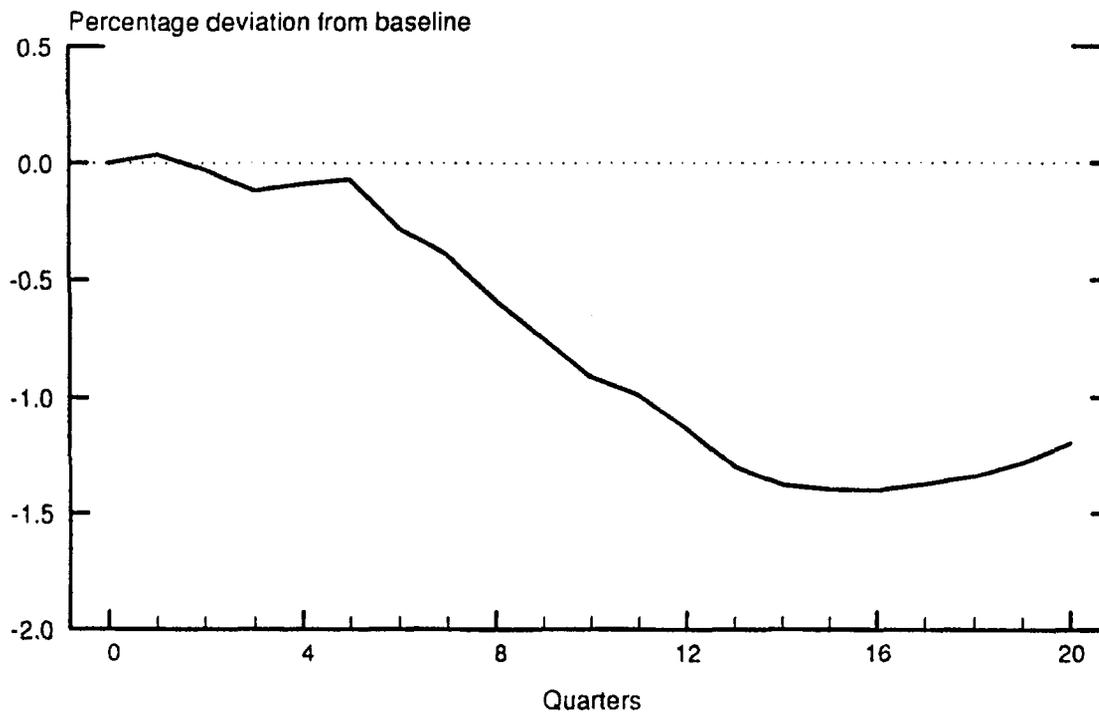
Figure 2

RESPONSE TO A TWO-YEAR, ONE PERCENTAGE POINT RISE IN THE FEDERAL FUNDS RATE.

Level of GDP



Consumer Price Inflation



Funds rate rise begins in period 0.