

# Synching, Not Sinking, the Markets

Meeting of the Philadelphia Council for Business Economics  
Federal Reserve Bank of Philadelphia  
Philadelphia, Pennsylvania  
August 6, 1999

I have long been fascinated with the study of market responses to policy actions. Prices in speculative markets respond sensitively to events, including policy actions and hints about policy actions, of all kinds. The markets I am referring to include the equity, bond, commodity and foreign exchange markets. Policy actions include those by the Federal Reserve, the executive branch of the federal government, the Congress, courts and many other governmental bodies. Although today I will discuss this topic in the context of Federal Reserve policy actions, I mention the wide array of markets and governmental units to emphasize that the subject is a very broad one indeed.

My interest in market responses to policy actions has only been heightened by my still-new job as St. Louis Fed president. I have found myself puzzling over market reactions to Fed policy and speculation about Fed policy. I am certainly acutely aware of the fact that what Fed officials say can move markets. The issue for me is how to understand market responses at a deeper level, because I think improved understanding will strengthen monetary policy and reduce market volatility.

My question is this: What would we expect to observe in speculative markets if monetary policy were working “perfectly”? I do not mean “perfectly” in some utopian sense, but within the context of the world of incomplete information in which we actually live. We know that policy problems may arise when the central bank and the markets have different information sets, or have different perceptions about the state of the economy or the direction of policy. My concept

of policy “perfection” is that the markets and the central bank have the *same* information set, incomplete though it may be. Information is incomplete because the future is uncertain and the discipline of economics is unsure about many important relationships.

I’m deliberately using the word “perfect” rather than the word “optimal” because I want to avoid the implication that the subject at hand is an optimal control issue, which would involve such matters as a possible trade-off between employment stability and price stability. I am assuming that society has somehow made its choices according to the objectives of monetary policy and how they are to be pursued within the constraints of how the economy works. The terminology is a bit awkward; information is inherently imperfect, but my topic concerns differences in information held by the central bank and the markets. By policy “perfection,” I mean that the differences in information have disappeared—both the central bank and markets have the same imperfect set of information. I’ll keep “perfection” in quotation marks to help make clear that the issue is the equality of imperfect information between the central bank and the markets.

The assumption that monetary policy is “perfect” implies certain things about how markets should behave. I will concentrate on the behavior of financial markets, and will take as givens the policy goals so I can concentrate on the “perfection” of information between the markets and the central bank. This topic is a large one; my purpose is to introduce my model, explain how this model can help us understand how policy has

## MONETARY POLICY AND INFLATION

evolved, suggest ways in which departures from “perfection” indicate problems with my underlying model and ways to improve policy. I’ll only be able to touch upon a few of these areas.

Here are the key questions my analysis addresses: Under a “perfect” monetary policy, would we observe large market responses to policy actions? And, would we observe large market responses to innovations, or surprises, in economic data? I will argue that under a “perfect” monetary policy, we should not expect to observe *any* market reactions to Fed policy actions. Every Fed policy action should be completely anticipated by the time it occurs, and therefore should be a nonevent in the markets.

I’ll proceed by first listing a few examples of dramatic policy changes that did have major effects on market prices. Then I’ll briefly discuss the efficient markets model that serves as the baseline explanation of price determination in speculative markets. Because my topic concerns the interactions of the markets and the policymakers, I’ll next discuss Federal Reserve objectives and policy implementation. Putting the market and Fed policy together, my claim is that policy “perfection” requires the Fed and the markets to react the same way to arriving information. In this case, the market and the Fed are in synch; the market anticipates Fed policy actions and is not surprised by them. Large changes in market prices to policy actions obviously indicate market surprises. In such cases, policy changes can sink the markets, or send them into orbit.

Before proceeding, I want to emphasize that the views I express here are mine and do not necessarily reflect official positions of the Federal Reserve System. I thank my colleagues at the Federal Reserve Bank of St. Louis for their comments, while retaining full credit for errors.

## MARKET REACTIONS TO POLICY ACTIONS

Let’s start by examining a few dramatic examples of policy changes that reflected Federal

Reserve actions or had possible implications for future Federal Reserve actions:

- Sunday, August 15, 1971. President Nixon closed the gold window and announced comprehensive wage and price controls. The following day, the 20-year Treasury bond yield fell by 18 basis points and the Dow Jones Industrials rose by 3.8 percent.
- Saturday, October 6, 1979. The Federal Reserve introduced a dramatic set of new policies. When the markets reopened the following Tuesday (Monday was the Columbus Day holiday), the 30-year Treasury bond yield rose by 25 basis points, and the Dow Jones Industrials sank by 4.5 percent.
- Sunday, September 22, 1985. The G5 countries announced the Plaza Agreement, which called for these countries to pursue policies to depreciate the foreign exchange value of the U.S. dollar. The trade-weighted dollar index fell by 3.5 percent the next day, the 30-year Treasury bond yield rose 6 basis points, and the Dow Industrials rose 1.4 percent.

These three examples reflect dramatic policy changes. I could offer hundreds of other smaller and more routine examples. I have refrained from listing examples of market responses to nonpolicy information, such as the employment report that arrives on the first Friday of every month, but I am sure that everyone here is familiar—perhaps all too familiar—with such market responses. Markets react to data releases in part because of the belief that the central bank will respond to the information.

What do we make of these market reactions to both policy actions and data releases? From a policy perspective, are these market responses simply an unavoidable side effect of policy actions? Should the monetary authorities attempt to avoid large market reactions, or are the market reactions an essential part of the process by which monetary policy effects are transmitted to the economy?

## THE EFFICIENT MARKETS PARADIGM

The efficient markets paradigm surely has to be the starting point in understanding speculative markets. According to this view, speculative markets respond efficiently as market participants assess all relevant information—absolutely everything that might influence market prices—and bid market prices up or down accordingly. Given that investors bid current prices to levels at which risk-adjusted expected rates of return are equalized across various investment alternatives, each new piece of information may move market prices. The efficient markets model is not perfect, but it certainly goes far in explaining the behavior of speculative prices.

So, markets respond to the flow of all sorts of information, including that from the central bank. Federal Reserve policy actions, and statements by Federal Reserve officials—especially the chairman—affect market expectations about the future and, therefore, current market prices.

The information that matters, of course, is new information. Everything predictable has already been bid into market prices; only the reports coming across the wires that change the probabilities of future outcomes affect current market prices. This point is well understood by most market participants and most of the financial press.

## MONETARY POLICY ACTIONS

Now I want to discuss the interactions of speculative markets with monetary policy actions.

Market participants are trying to forecast the future, and so they are naturally interested in what the Fed is trying to do. Let me make the assumption—which I think is accurate, but will not argue here—that the goal of the Federal Reserve is to keep the rate of inflation low and steady, a goal that I’ll call “price stability.” Also, insofar as possible given the price stability goal, the Fed wants its policy actions to contribute to the stability of employment and output. I believe that

price stability will, if anything, yield lower average unemployment than will prevail at higher inflation. Price stability will contribute to maximum sustainable economic growth.

So, the Fed’s primary goal is price stability and its secondary goal is stability of output and employment to the extent possible. However, my argument does not depend on the specification of the monetary policy goals—substitute your own if you do not like my formulation. Of course, the markets must assess not only the Fed’s goals, but also its skill in achieving those goals. I also take as given the policy procedures the Fed uses to reach its goals. The point is that the Fed’s policy goals and procedures are key pieces of information to the markets because this knowledge helps market participants predict how the Fed will respond to new information.

How would we expect markets to behave if Federal Reserve policy were “perfect?” If policy were “perfect,” we would certainly *not* expect the federal funds rate—the Fed’s short-run policy instrument—to remain forever constant at an unchanged level. The fed funds rate would have to be higher sometimes and lower sometimes to be consistent with the policy objectives. How would the Fed decide when and by how much to change the federal funds rate? Well, as new information arrived, the Fed would process that information to decide on adjustments of the federal funds rate. FOMC members are constantly examining the flow of incoming information on the state of the economy and working to decide what policy actions may be necessary to keep the economy on the desired track.

Of course, FOMC members may have different interpretations of the incoming flow of data and the appropriate policy responses. The implications for policy of a particular event are rarely perfectly clear. The fact is that economics provides tremendous guidance, but does not provide calculations out to the second decimal place. Indeed, sometimes even the appropriate direction of policy action is unclear. Nevertheless, it is helpful to think about policy this way: There is in principle some correct policy response to each piece of

## MONETARY POLICY AND INFLATION

information that comes along, and that the aim of the FOMC is to dial in that response at its next meeting. The appropriate response, for example, may be to keep the funds rate steady. Indeed, I am convinced that one of the greatest benefits a high degree of market confidence in the Fed affords is the Fed's ability to sit tight and wait until it's quite clear which Fed policy actions are appropriate.

Now let's return to the market responses. The markets and the Fed are both responding to the same flow of information. At this point, let's assume that the markets and the Fed get the same information at the same time—neither has an informational advantage. It is easy to see the nature of the expectational equilibrium. The markets and the Fed have a common response to new information. The markets know the Fed's policy objectives and the policy adjustments that are appropriate given each piece of new information. The FOMC meets every six weeks, but by the time of each meeting, the markets know full well what policy adjustment, if any, is necessary and desirable. The Fed adjusts policy according to the market forecast, and no one is surprised. Fed action is a nonevent in the markets.

The predictability of Fed policy actions under these conditions is the central insight of the analysis. Given that the FOMC acts as the market forecasts, the FOMC's actions are not themselves information and therefore elicit no adjustment of market prices. Those adjustments have already taken place during the period between FOMC meetings as the markets respond to the steady flow of new information in the form of the employment report, housing starts, productivity, employment cost index, etc., etc., etc.

## SYNCHING MARKETS AND POLICY

This idealized picture of the markets and the Fed responding the same way to the same data is, I believe, the model we should all be striving to achieve. We want price stability precisely because we believe that avoiding inflation surprises adds to the efficiency of the market economy and pro-

motes maximum sustainable economic growth. We cannot hope or expect to avoid all surprises, for the nature of our world is that the future is unpredictable. These unpredictable events include natural disturbances, such as earthquakes and floods, political disturbances at home and abroad, many changes in tastes and technology, and so forth and so on. Markets respond efficiently to these disturbances most of the time. Our aim is for monetary policy to offset shocks, when possible, to prevent them from pushing the economy away from price stability. Of course, we also want to avoid introducing monetary policy disturbances per se that adversely affect price stability.

The job of the central bank is to maintain a clear focus on price stability and to convey that focus to the markets. The central bank and the markets can then respond in identical fashion to the flow of incoming information, reaching the same conclusions as to implications of the information for monetary policy adjustments. In this model, the markets are not taken by surprise by policy actions, for they have already figured out what needs to be done.

I think this idealized picture takes us a long way toward understanding how monetary policy and the markets *should* interact when policy is on a successful track. In this environment, the Fed and the markets are synched. With complete synchronization, the markets and the Fed have a common understanding of the objectives of monetary policy and a common interpretation of the significance of each piece of incoming information.

Suppose the federal funds futures market does, in fact, accurately forecast decisions at FOMC meetings. Is that an indication that the Fed is simply following the markets, and not exercising its proper leadership role? Obviously, I think not. Market prices that anticipate what the FOMC is going to do are not only consistent with policy "perfection," in the sense that I have been discussing, but also actually *necessary* for policy "perfection." Regularity and predictability are important policy goals. Market success in anticipating FOMC actions indicates Fed success in designing policies to achieve goals society accepts, and in conveying those policies to the public. I

put the point this way because no central bank in a democratic country can long pursue goals not accepted by the society at large. The markets and the Fed cannot converge on a common understanding of the direction of monetary policy if the Fed does not pursue its goals in a consistent fashion over time.

What do we make of cases in which Fed policy actions create large market responses? Clearly, policymakers can sink the markets, or send them into orbit, when a surprise policy action boosts market prices. Changes in policy direction are not necessarily undesirable; policy *ought* to change if it has drifted off course. That, I believe, was the case with the 1979 change in Fed policy. What is unfortunate about such a case, however, is that policy drifts off course in the first place. Sinking, or orbiting, the markets certainly can reflect some sort of policy failure, either because an undesirable policy is being corrected or because policy is taking off in an unforeseen and undesirable direction. I believe that the 1971 policy turn toward comprehensive wage and price controls was an example of policy taking a wrong turn. I include this case in my list of examples because the introduction of wage and price controls did have monetary policy implications; many observers thought the controls would take care of inflation and permit monetary policy both to be more expansionary and drive down unemployment.

Sinking may also reflect some sort of market error. I have deep respect for market judgments but do not believe that they are invariably correct. Sometimes markets wake up to errors, and prices adjust rapidly. Very little is known about this subject, but the 1987 stock market crash is certainly an example of a market error. Either the crash was an error, the market advance prior to the crash was an error, or both were errors. No economic data or policy changes arrived at the time of the crash to justify an adjustment that large.

In any event, the key point remains. A large market response to a Fed policy action is evidence that the markets and the Fed are not in synch. Either the market or the Fed, or both, must have been operating on the basis of different information, which may include different assessments

of the significance of readily observable data. The more complete the convergence of views between the market and the Fed, the better the economy will work. Convergence reduces market volatility and expectational errors, which can lead to resource misallocation. Firms, for example, may make investments that prove to be unprofitable because their expectations were wrong.

The Fed has not reached the point that its policy actions elicit zero response in the markets. But let me offer a hypothesis, which I have not yet investigated but hope to be able to. Everyone agrees that, in recent years, economic outcomes—in terms of both inflation and unemployment—have been better than in the past. My hypothesis is that monetary policy has been more regular and predictable than it used to be. This hypothesis can be tested by examining whether Fed policy actions account for a smaller fraction of the variance of interest rate changes in recent years than in the past. Put the other way around, my hypothesis is that nonpolicy events, such as data releases, account for a larger fraction of total interest rate variance now than they did in the past.

My model of synching the markets and policy is incomplete in some important respects. Two issues particularly concern me.

First, the pure version of the model requires that the Fed and the markets have the same information about the economy. I think that, relative to the markets, the Fed actually has superior information in some cases and inferior information in other cases. What is clear is that full synchronization with the markets requires that the Fed pay careful attention to both collecting and conveying information. Transparency and clarity are necessary ingredients for policy success.

Second, there are considerable differences in professional opinion about how the economy works. The debates inside the Fed and outside the Fed are similar. The markets and the Fed will never be completely in synch because there will always be something for economists to argue about, and the Fed and the markets will not necessarily come to the same judgments. Still, it is important not to lose sight of the fact that there is an enormous common base of understanding

## MONETARY POLICY AND INFLATION

between the Fed and the markets, and that this common base has a lot to do with policy success.

### CLOSING COMMENT

I'll close by re-emphasizing my main theme. When the markets and the Fed are in synch, both will have a common reaction to incoming data, and the markets will correctly anticipate Fed policy actions. An environment in which markets correctly anticipate Fed actions implies a situation in which Fed policy is widely understood, regular, and predictable. The fact that Fed policy actions sometimes take the markets by surprise shows that we have not reached "perfection" yet.

Still, it is important to recognize that the Fed has made tremendous progress over the last 20 years or so in pursuing a consistent policy designed to establish price stability as the norm for the economy. The Fed and the markets are mostly in synch; surprises in the incoming data—whether on prices, employment, GDP, activity in economies abroad, and so forth—are surprises to both markets and the Fed and both read the surprises pretty much the same way. If the market and Fed readings become identical, we can expect that Fed policy adjustments will convey no new information to the market, and therefore market

prices will not respond to them because they are fully anticipated.

I believe that a policy agenda designed to heighten the degree to which the Fed and the markets are in synch is an ambitious and worthy objective. We in the Fed need to work on two fronts, in my opinion. One is the policy front itself, making sure that policy actions are as appropriately timed and scaled as possible. The second is on the disclosure front, making sure that knowledge inside and outside the Fed converges to the maximum possible extent.

Progress on both fronts will require continuing research. It is clear to me that new insights into the convergence, or lack thereof, of information between markets and the Fed will play a central role in this research. My insight today is completely consistent with—indeed is implied by—rational expectations macro models. What I had not done before in my own mind is relate these abstract models to the daily ebb and flow of market reactions to new information. The conclusion I have been discussing—that, with full convergence of information, Fed policy actions will not affect market prices because the market has already predicted them—initially surprised me. But the more I think about the matter, the more compelling the conclusion is. I hope you agree.