

What Role for Asset Prices in U.S. Monetary Policy?

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A recurring topic of debate among monetary policymakers and academic experts for a decade and more is whether, and under what conditions, a central bank should adjust policy in an effort to affect the direction of the stock market. This issue arose initially in the context of the stock market boom in Japan in the late 1980s and the subsequent market decline in the 1990s. Not only did the Japanese stock market decline, but also the Japanese economy has suffered from an almost continuous stagnation since the early 1990s. In the United States, the stock market boom after 1995, and especially after the fall of 1998 until the early part of 2000, raises the same issue. Given that the U.S. economy's growth has been near zero this year, it is natural to ask whether tempering the prior stock market and economic boom might have reduced the difficulties the economy has faced this year.

I'm going to discuss this issue as carefully as I can, but in a broader context of asset prices in general. Although the stock market and business high-tech investment are the focus of attention today, 10 years ago the real estate market was the issue. The parallels are striking—today, declining stock prices, weak business investment, distressed stock market investors—10 years ago, declining real estate prices, weak construction spending, and distressed lenders.

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, especially Robert Rasche, director of Research, and Frank Schmid, economist in the

Research Division. However, I retain full responsibility for errors.

Here is my plan of attack. I'll begin with a bit of background material to set the stage for the analysis that follows. Next I'll discuss monetary policy implementation, which works through the bond market, which is one of the economy's important asset markets. Following that discussion, I'll emphasize the information to be gleaned from asset markets. The informational value of these markets stems fundamentally from the fact that asset markets are forward-looking, and the central bank must also be forward-looking. Finally, I'll take up the issue of whether the stock market should be a direct object of monetary policy. To end the suspense, I want to make clear that I am a one-armed economist on this issue. My answer is no, no, a thousand times no, the central bank ought not to target the stock market itself.

BACKGROUND

In the 17-month period from April 2000 through August 2001, the U.S. stock market lost roughly a quarter of its value as measured by the Wilshire 5000, the broadest stock market index. By the end of August, the Wilshire 5000 had returned to its level of November 1998. The booming stock market in the late 1990s made it easy to finance all sorts of new enterprises, including especially dot coms and telecoms. Many of these companies are now in significant trouble, or have already disappeared.

Let's take a closer look at the telecom industry, which is quantitatively much more important than the dot com industry. From December 1990 through

March 2000, the Nasdaq Telecommunications Index increased by almost 1300 percent, whereas the Wilshire 5000 stock market index increased by about 360 percent. The increased importance of the telecom industry in the stock market was accompanied by a near doubling of the industry's share in real GDP from 1990 to 2000. In April 2000, the Nasdaq Telecommunications Index began a 12-month decline in which it shed 60 percent. Bankruptcies and restructuring accompanied the decline in stock market valuation; there were plant closures and significant layoffs. As the telecom industry shrinks, there seems little doubt there was a misallocation of resources in the late 1990s. The telecom euphoria was widespread. The stock market was part of this euphoria, and the distorted asset price signals from the stock market permitted the industry to raise capital easily and cheaply, which certainly contributed to the over-expansion.

From what we now know, it is easy to question the effectiveness of the stock market in allocating scarce resources to their most efficient use. Could the Federal Reserve have prevented such waste of resources and the accompanying losses to investors? This is not an easy question, but obviously an important one. The question is not easy because any time an enterprise fails we can say that there was a mistake. The issue is whether we can reliably identify such cases in advance.

I'm going to embed my stock market analysis in a broader analysis of asset prices in general. There is a multitude of other types of assets in the economy besides stocks, and many of these assets are every bit as important as equities. As of the end of the first quarter of this year, data for the United States show that the total market value of equities was about \$14.9 trillion, bonds about \$14.6 trillion, and household real estate about \$11.3 trillion. Although the stock market is highly visible because of its extensive minute-by-minute reporting, the same sort of policy issues arise in these other asset markets. Should the central bank act to temper a housing boom, or a commercial real estate boom, or a bond market boom? The same question arises if we replace "boom" with "swoon."

MONETARY POLICY IMPLEMENTATION

The central bank implements monetary policy through the financial markets, and so policy implementation is a logical place to begin a careful analysis of my topic. Most fundamentally, the aim of monetary policy is to create liquidity at the rate required to keep the rate of inflation low and stable, averaged over a period of several years. Monetary policy can also vary the rate of liquidity creation in the short run to help stabilize employment and output growth.

To implement policy, the Federal Reserve sets a target for the federal funds rate, which is the price of overnight inter-bank loans. Market expectations as to the future path of the effective federal funds rate tie down the yields of short-maturity Treasury securities, and those in turn affect long-term Treasury bond yields and yields in the corporate bond and mortgage markets. Bond prices, of course, move inversely to bond yields. Bond prices are one influence on equity and real-estate prices.

The transmission of monetary policy actions to the economy works through many channels, but I'll mention two that are especially relevant in the context of this lecture. All else equal, a lower bond yield will tend to raise stock market valuations. As the cost of capital decreases, more investment projects become profitable, which encourages increases in capital spending. A second effect arises because changes in stock market valuation also affect household wealth and thus, possibly, consumption expenditures. The magnitude and timing of these effects are uncertain, which is one of the things that makes monetary policy management a challenge.

THE INFORMATIONAL ROLE OF THE TREASURY MARKET

When analyzing the implementation of monetary policy and how policy effects are transmitted to the economy through changes in asset prices, clarity requires assuming "all other things being

equal.” But, all other things are always changing. That fact opens up the possibility that the behavior of asset prices contains information about how other things are changing. Such information can be invaluable in adjusting monetary policy appropriately.

A particularly clear and important example of information embedded in asset prices is information on inflation expectations and the real rate of interest. The real rate of interest is the return on an asset after taking account of inflation. Today, we are fortunate to have excellent information on inflation expectations and the real yield on Treasury bonds from trading in Treasury Inflation-Protected Securities, known in the market as “TIPS.” These bonds, first issued by the Treasury in 1997, contain a provision that increases their principal and every semiannual interest payment by the increase in the consumer price index. TIPS, therefore, completely protect the investor from the effects of inflation and the yield on the bonds is by definition a real yield. The difference between the yield on a TIPS bond and a conventional bond provides a measure of the market’s expectation of future inflation. For example, last Thursday the TIPS bond maturing April 2029 had a yield of 3.41 percent while a conventional Treasury bond maturing August 2029 had a yield of 5.46 percent. Ignoring the trivial difference between the April and August maturity dates 28 years in the future, these two bonds will turn out to have identical yields if the inflation rate between now and 2029 averages 2.05 percent, the difference between the two quoted yields. As a first approximation, we can say that these two asset markets are providing us with the information that investors expect that the inflation rate will average 2.05 percent over the next 28 years.

The TIPS spread has fluctuated a bit in recent years, but it is safe to say that the absence of any significant trend in the spread provides convincing evidence of the market’s continuing confidence that the Federal Reserve will pursue policies that will keep the rate of inflation relatively low for years to come. That is an important piece of information, highly relevant to the conduct of monetary policy.

Because low and stable inflation is a key objective of monetary policy, the TIPS spread provides important evidence on whether the market *believes* the Fed will be successful. The spread does not reflect a judgment one way or the other as to whether the current rate of liquidity growth, or the current federal funds rate, is appropriate but rather that the Fed will make whatever adjustments in policy are required to keep inflation low on average in future years. Should the TIPS spread start to move convincingly higher, in my judgment it would be important for the Federal Reserve to act to ensure that policy became less expansionary. Or, if we were convinced that the market was simply making a mistake in its judgment, it would be important to explain to the market the nature of the mistake.

Perhaps less well appreciated, the real yield is itself a valuable piece of information. One measure of how the thrust of monetary policy is changing is the direction of change in the real yield. When the central bank wants policy to be more expansionary, in general it wants to see the real yield fall, all other things being equal. Between May 2000 and last Thursday, the yield on the TIPS bond maturing in 2029 fell from 3.97 percent to 3.41 percent. Just to be sure that I do not leave a mistaken impression, however, I hasten to add that the real yield in an economy is not determined primarily by monetary policy but instead by the interaction of the real rate of return on physical capital and available savings—by “productivity and thrift” to use the classic terminology.

Before TIPS were available in the marketplace, we would have observed that the conventional Treasury bond maturing in 2029 had gone from 6.28 percent in May 2000 to 5.46 percent last Thursday. To decide how much of the change in the nominal yield on conventional bonds reflected a change in the real yield and how much a change in inflation expectations, we would have had to rely on survey data on inflation expectations, have estimated a model of some sort, or made an educated guess on how the two components of the nominal yield were changing.

This discussion of information available from the TIPS market illustrates a more general point: We are able to extract useful information from a number of new markets, such as futures and options markets, that is extremely valuable for improving the information base necessary for more effective monetary policy. I don't want to get too far afield, but will offer one more illustration of this point: Trading in distant crude oil futures contracts helps us to understand the market's best guess about the probable future direction of energy prices. That information helps us to understand whether a run-up of oil prices might indicate a developing long-term inflation problem or is likely a temporary phenomenon.

THE INFORMATIONAL ROLE OF THE STOCK MARKET

Let me now turn to the stock market. It is fair to say that many questions surrounding the equity market are not well understood. The dearth of knowledge in this area limits its role as a provider of information for monetary policy decisions.

The key theoretical principle here is that the value of a stock is based on expected growth of the company's earnings, the riskiness of the company, and some other factors that are not central to my analysis. Actual earnings growth changes over time and so do expectations. Empirical studies show that changes in actual earnings growth account only for a fraction of the changes in stock prices. The issue is the extent to which the remainder of changes in stock prices can be attributed to reasoned and well-informed expectations about future earnings growth and the extent to which we should conclude that stock prices are "irrational."

Much of the time, I believe, stock price changes do reflect reasoned information about future earnings growth. Thus, my first instinct is to interpret stock market changes as reflecting probable changes in future earnings, which in turn may reflect emerging trends in the economy. Moreover, an environment of rising stock prices is ordinarily one in which companies can more

readily raise funds in the market, which supports higher business capital spending. Conversely, declining stock prices may portend weaker capital spending. This information is obviously relevant for monetary policy.

Unfortunately, stock prices have a significant overlay of noise—uninformative, short-run fluctuations—that makes it highly problematic to put much weight on the stock market in reaching judgments about the appropriate course of monetary policy. Moreover, it does seem that some changes in market prices reflect an irrational component.

I do not believe that anyone will ever find simple, straight-forward measures of the irrational component or regularities that will permit us to determine reliably that the stock market is significantly over- or under-valued. Investment success is just not that easy. For example, the P/E ratio for the S&P 500 stock index reached a peak in 1991 that was higher than any other earlier P/E peak since World War II and yet the stock market enjoyed a tremendous boom in the years that followed.

Every time the stock market declines significantly, it is not hard to find someone who "predicted" the decline. The episode we are currently living through is no different. Shortly before the market peaked in March 2000, Robert Shiller, a respected finance scholar from Yale University, published a book entitled *Irrational Exuberance*. He concluded that the U.S. stock market was poised for a sharp decline. Shiller's book is an effort to better understand the market by drawing on insights from psychology as well as economics, and he illustrated many of his ideas by referring to the state of the market in 1999.

Where I come out on these issues is that the state of knowledge is so incomplete that it is foolhardy for me to form genuine convictions as to when the stock market is over- or under-priced. I may have vague, gut feelings from time to time, but I do not trust such feelings to form a basis for monetary policy decisions. Moreover, I am convinced that as scholarly work on the stock market improves our understanding, that work will influence market behavior and help to reduce the

magnitude of mispricing. Nevertheless, we will still be left with a large range of uncertainty in any given circumstances.

In summary, the behavior of the stock market has never been easy to decipher. I am convinced that there is useful information in the market, but also that it is always necessary to be very skeptical. In my mind, the stock market alone never provides reliable information but it can be very useful in supplementing or reinforcing information from other sources.

SHOULD THE STOCK MARKET BE A DIRECT OBJECT OF FEDERAL RESERVE POLICY?

I've argued that it is devilishly difficult to extract information from the stock market useful for monetary policy. The converse of this proposition is that any particular market move may be fully justified—it is just not easy to tell. Clearly, it would be a mistake for the central bank to attempt to roll back a market move that was in fact fully justified. That is a very good reason for the central bank not to target the market directly. The central bank should leave this kind of judgment to market mechanisms.

Suppose, though, that you do not share this view. The problem then is to figure out what the Federal Reserve could do to push the stock market up or down. In the late 1990s, some proposed that the Fed should use margin requirements, which have been held stable at 50 percent since 1974. The argument went that higher margin requirements would make it more costly for investors to finance stock ownership by borrowing from brokers, and that the increase in stock prices would consequently slow or stop. From my perspective, the margin requirement is a hazardous policy tool because little is known about the potential consequences of such a move. There is a spectrum of conceivable consequences associated with a change in margin requirements: On one end of the spectrum lies complete ineffectiveness, and on the other end lies a change in stock

prices far larger than anticipated or desired. Either result may damage the Fed's credibility. I reject as unwise in the extreme a call to "do something" without any reasonable basis for estimating the probable effects of the action.

If changing margin requirements does not have a predictable result, what about changing the target rate for federal funds? It is very important to understand that the Federal Reserve has only one monetary policy instrument, which is the federal funds target rate or, more generally, the rate at which the Fed provides liquidity to the economy. A widely known result from control theory states that, with one instrument, the policymaker can at best achieve one policy objective. That objective, in my view, ought to be a low and stable rate of inflation. As a matter of logic, therefore, pursuing a separate stock market objective means compromises of some sort on the inflation objective. Clearly, targeting the stock market might come at a high price. Once the Federal Reserve compromises on its price stability goal, inflation and inflation expectations build up. Experience shows that inflation expectations are persistent, and inflation fighting tends to entail recessions. Because permitting the economy to run off track has negative consequences for the stock market, any effort to target the stock market is likely to be self-defeating.

TARGETING THE STOCK MARKET: A QUALIFICATION

On rare occasions, one or more asset markets may go into a free fall that calls for a central bank response. October 19, 1987, was such a case. The chaotic decline in stock prices that day threatened the market mechanism itself. A somewhat similar, but less extreme and less dramatic, episode occurred in the fall of 1998, when a number of asset markets were disrupted over several weeks following the Russian default and near failure of Long Term Capital Management. I addressed this subject in London last November in my Henry Thornton Lecture, entitled "Expectations."

The diversity of these cases, and the unique circumstances in each case, is well illustrated by adding two more entries to the list I've mentioned. One was the failure of the Penn Central Railroad in 1970, which led to extensive problems in the commercial paper market. Another was the near failure and bailout of Continental Illinois Bank in 1984, which disrupted the bank CD market. A contrary case, which nicely illustrates the general principle, was the failure of Drexel-Burnham-Lambert, a major securities firm, in 1990. Neither the Federal Reserve nor any other agency responded to this failure, and the market absorbed the news without significant problems. The general principle at work in these cases is that the central bank may need to respond when market mechanisms themselves are damaged by whatever event has occurred.

AN IMPORTANT DISTINCTION: OFFSETTING THE EFFECTS OF ASSET PRICE CHANGES

I've emphasized that, except for the rare qualification of market disruptions so severe that market mechanisms themselves are at risk, I am convinced that the central bank ought not to target asset prices themselves. But, that does not mean that asset prices are irrelevant to monetary policy and that they might not induce a policy response.

Suppose the Federal Reserve implemented policy with a policy instrument other than the federal funds target rate—I'll call it Instrument X. How would Instrument X behave? How would interest rates behave?

To keep the rate of inflation low and stable, the Fed would adjust X from time to time to offset whatever disturbances threatened to push the rate of inflation off its desired low and steady path. As a consequence of changes in X, and as a consequence of changes elsewhere in the economy, interest rates would rise and fall, much the way gasoline prices rise and fall as a consequence of actions by OPEC, seasonal patterns in demand, refinery fires, and so forth.

The Fed does not in fact employ an Instrument X. Instead, it adjusts its target for the federal funds rate in an attempt to reproduce, more or less, how that rate would change in response to market forces if the Fed actually employed Instrument X. That means that the Fed is prepared to adjust the federal funds target in response to events of all kinds that might push the economy off its desired track. The Fed may respond, therefore, to stock market fluctuations if doing so is necessary to offset the effects of those fluctuations.

This is a distinction with a difference. At any given time, many different impulses are affecting the economy. If the stock market is falling in a sustained way, which by itself would tend to reduce the economy's upward momentum, but the sum total of all other factors is still generating excessive upward pressure, then it would be appropriate for the Fed to tighten policy despite the possible adverse effect on stock prices. Targeting the economy and targeting the stock market per se are two very different things.

The stock market is relevant for monetary policy in at least two different ways. First, for the household sector, a depreciation in the stock market represents a decline in personal wealth. Although lower personal wealth implies lower consumption capacity, the evidence does not indicate that the influence of the stock market on personal consumption is quick and highly predictable. Despite the uncertainty, given the potentially harmful effect of stock market depreciation on consumption, the Fed obviously cannot ignore this issue. A stock market decline makes me especially sensitive to the possibility that consumption might be adversely affected, and if such an effect is supported by other data, I am more inclined to favor policy action than I otherwise would be.

Second, for the business sector, the stock market affects the capacity of firms to raise capital to support new investment spending. Here again, the effects are not highly predictable but combined with other evidence the behavior of the stock market can contribute to the overall assessment of the outlook for investment.

An example in which the Federal Reserve succeeded in offsetting potential damage from an abrupt disruption of the securities markets was the Russian default on domestic government debt in the summer of 1998. The Federal Reserve swiftly responded with monetary easing to prevent disruptions in the financial sector from spilling over into the real economy. The drop in the S&P 500 stock index by about 10 percent in the third quarter of 1998 was followed by a more than 20 percent increase in the stock market index in the subsequent quarter. Economic growth continued unabated. The rate cuts in the fall of 1998 were subsequently reversed and inflation remained subdued. The episode illustrates that policy actions to prevent financial market disruption from spilling over to the general economy need not conflict with achieving the primary goal of low and stable inflation.

CONCLUDING REMARKS

Asset markets play a central role in a market economy. Policymakers cannot and ought not ignore these markets. Making effective use of information from asset markets and offsetting, to the extent possible, adverse effects on the general economy flowing from asset price changes are important ingredients of a successful monetary policy.

For reasons I've tried to explain with some care, I believe it is very important that the Federal Reserve not take a position per se on the level of prices in asset markets, especially the stock market. It is very easy to be wrong about the appropriate level; this judgment ought to be left to the

market. That is the kind of judgment that markets excel in making, at least relative to the judgments made by public officials.

I want to finish on a personal note. During the late 1990s, and especially 1999, there were elements of market behavior that made me very uncomfortable. The issue was not just the run-up of prices but also the expansion of speculative trading, especially day-trading by apparently inexperienced individuals. The lack of attention by analysts to earnings prospects of some companies was troubling. At the same time, the market seemed vulnerable to triggering events that might induce a sharp decline. As troubling as this situation was, it did not seem appropriate for me to discuss the market. Insofar as any comments I might make would have an effect on the market, I had no idea what these effects might be.

Indeed, the market environment was such that I did not want to utter the words "stock" and "market" back to back in a speech, even to discuss the issues at a fairly general level as I have in this lecture. It is unfortunate, I think, when a topic seems so sensitive that even a general discussion is inadvisable. But today's environment is calmer, and I hope that I have been successful in establishing the critically important distinction between targeting the stock market itself and offsetting undesired effects of stock market changes. The job of the central bank is keep the rate of inflation low and steady and contribute to sustained economic growth. Policy actions will affect asset markets from time to time, but in my view these effects ought always to be side effects of the central bank pursuing its responsibility for the general health of the economy.