

Chicago Fed Letter

Asset price bubbles: Implications for monetary, regulatory, and international policies

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A recent conference cosponsored by the World Bank and the Chicago Fed brought financial industry experts together to discuss the phenomenon of asset price bubbles, which many identify as a feature of the U.S. stock market in the late 1990s. Participants analyzed the difficulties in identifying asset bubbles and explored ways that central banks and other monetary authorities might help ease their effects.

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Many view recent activity on Wall Street as representing the bursting of the "great stock bubble of the 1990s." However, how do we really know whether we have experienced or are experiencing a bubble? Since the definition of a bubble, generally a period in which securities trade at prices not justified by fundamentals such as earnings, is not precise in economics or finance, experts offer different answers to this question. Given the difficulties in determining the bubble's presence after the fact, the identification problem is even more difficult during the bubble's formation. However, this identification is very important. Among other things, the existence of such a bubble could require central banks and financial authorities to alter their monetary and banking policies. The World Bank Group and the Federal Reserve Bank of Chicago sponsored a conference, "Asset Price Bubbles: Implications for Monetary, Regulatory, and International Policies," held at the Chicago Fed on April 22–24, 2002, to address these issues. Leading academics, policymakers, and practitioners from throughout the world gathered to present current work on this subject. This *Chicago Fed Letter* summarizes the discussions and conclusions from this conference.¹

The keynote speaker on the opening night, Randall Kroszner, member of the President's Council of Economic Advisers, discussed the information difficulties inherent in the identification of bubbles. "The research record on asset price measurement is far from being sufficient to build a policymaker's confidence," said Kroszner. He pointed to various inconsistencies in financial history for periods in which the Standard & Poor's 500 rose rapidly. For example, the peak in 1956 was not followed by a precipitous decline, while those in 1929 and 1937 were. Even some purported bubble periods of the past are still in question, making real-time identification of bubbles even more difficult.

One thing that financial authorities can do to better identify and prevent bubbles is to improve the public's access to accurate information. To make a judgment about the appropriate price for a particular stock, an investor must have solid information about the firm's fundamentals. The access to this information must be public and widespread. "When a price seems to outstrip fundamentals, an investor logically asks whether it is a bubble or whether he or she does not have access to important information about fundamentals," said Kroszner. He

supports recent efforts by the Bush administration to increase and improve this information, including the President's ten-point plan to improve financial disclosure and enhance shareholder protection and a proposal to reform 401(k) retirement account rules to expand the availability of investment advice.

The Governor of the Bank of France, Jean-Claude Trichet, opened the first morning of the conference with a central banker's perspective. Trichet offered a cautious stance on the decision of whether asset prices should be an input or target of monetary policy. While acknowledging the serious cause for concern that asset price developments can generate, he argued that the difficulties in determining the existence of a bubble could cause a policy targeting or including asset prices to do more harm than good. Determining the existence of a bubble requires knowledge of what the "true" asset prices should be. While this may be relatively easy to determine theoretically, it is impossible in practice. Also, if central banks took the position of always counteracting the deflation of a bubble, agents may see stock investment as relatively riskless, and equity markets would be exposed to moral hazard. "Agents may become involved in riskier projects without having consciously taken the decision to accept greater risk," Trichet stated.

Trichet identified a role for the central bank and financial authorities in promoting diverse behavior on the part of investors. A short-term outlook seems to have presided over the markets, reinforced by the focus on stock index performance, with herd behavior being the result. Contrarian viewpoints are lacking. According to Trichet, "More and more participants are able to access financial markets directly, while the expertise to deal with a larger set of technical information is not evenly distributed. ... [These] factors ... encourage homogenous behavior and reactions to the detriment of the diversity that is indispensable to the smooth functioning of financial markets." Trichet proposed that we continue efforts to increase market transparency, adjust accounting standards and practices to promote medium- and long-term

participation in the markets, and improve and diversify the risk-management tools currently used by financial institutions.

If a bubble has indeed occurred, and subsequently burst, the likely result would be a crash in the stock market. In addition, if sufficiently large, the crash should bring about severe financial instability, since firms' balance sheets will be left in a delicate state. This will result in an increase in adverse selection and moral hazard, and the premium on low-versus high-quality bonds will rise. Frederic Mishkin, Columbia University, and Eugene White, Rutgers University, looked at stock market crashes in the U.S. over the last 100 years. They compared crashes that led to no significant financial instability with those that caused severe financial system distress. Most crashes did not lead to overall financial instability; in these situations, it is best for the monetary authority to react to key macroeconomic variables, not the crash. In fact, if the focus is on the stability of the financial system as opposed to the stock market, the policy response by central banks is more likely to be effective.

The experience with bubbles in Asia and Latin America suggests that financial authorities can do more to prevent bubbles from spiraling out of control and allow for "soft landings." Kunio Okina and Shigenori Shiratsuka, from the Bank of Japan, analyzed the asset price bubble that developed in Japan in the mid-1980s and burst in 1990, from which the market has yet to fully recover. Their research suggests that an aggressive monetary easing should have occurred upon the collapse of the bubble, but the weakness of Japan's bank-based financial system prevented the Bank of Japan from making the appropriate policy judgment. Many other East Asian countries experienced bubbles in the 1990s, but with different outcomes. Charles Collyns and Abdelhak Senhadji, from the International Monetary Fund (IMF), presented research showing that countries with strong bank regulatory systems, such as Hong Kong, Malaysia, and Singapore, weathered the asset price downfalls with less disruption. Latin American countries have also experienced bubbles in the last 20

years. Stock price movements were highly correlated across Latin American countries in the 1990s, suggesting that bubbles can be "contagious" and are strongly influenced by external factors, according to Santiago Herrera and Guillermo Perry of the World Bank. The most important determinant of the existence of a bubble in each of the largest Latin American economies has been the spread between ten-year U.S. Treasury bonds and three-month U.S. Treasury bills. These small open economies may need to better manage their terms of trade and capital flows to reduce the likelihood of future bubbles.

Irrational or rational bubbles?

There were many dissenting viewpoints about the existence, now or in the past, of irrational asset price bubbles. John Cochrane of the University of Chicago shared his theory that the recent high demand for tech stocks, despite their prices being well above fundamentals, represented something similar to a demand for cash as opposed to irrational beliefs about the future stock prices. Just as people hold paper money for short periods of time because of its usefulness in making transactions, people would buy shares of, say, Palm in order to make future transactions with it. Because of the inability to short sell costlessly, betting one way or the other on the future of the company requires owning shares of its stock. Palm's shares outstanding were very limited, giving it this "convenience yield." Once the amount of shares outstanding increased significantly, the transaction value diminished, causing the share price to fall. The very high turnover in shares of Palm and other tech stocks supports this theory. Ellen McGrattan and Edward C. Prescott, Federal Reserve Bank of Minneapolis, offered evidence that, prior to the stock market crash of 1929, there was no bubble; in fact, stocks were undervalued based on their calculations of the fundamental values of U.S. corporations at the time. The subsequent crash was caused by severe tightening by the Fed, not the bursting of a bubble.

Allan Meltzer, Carnegie Mellon University, gave a keynote lunch address on rational and irrational bubbles.

Meltzer argued that “‘bubble’ is a name that we assign to events that we cannot explain with standard hypotheses.” For most of the bubble episodes referred to by others, Meltzer offered alternative explanations, usually involving either overly expansionary monetary policy (followed by an abrupt contraction) or rational expectations of productivity increases. In all cases, the actions of buyers and sellers in the equity markets have been rational, if not always without error as seen in hindsight. The recent experiences with rapid asset price declines, according to Meltzer, “suggest that expansive economic policies can compensate for any deflationary impulse on output prices coming from asset prices.”

Others, however, feel that the bubble phenomenon is very real. Werner De Bondt, University of Wisconsin-Madison, talked about bubble psychology and explained the contributions of behavioral finance. Though economic fundamentals may dominate in the long run, human psychology is important in the short run. He detailed a long list of individual anomalies in finance: overconfidence, over-reliance on the familiar, lack of diversification, chasing winners, and overtrading. Forecasts by security analysts, he showed, are too optimistic, too extreme, and unprofitable; these are results consistent with cognitive bias.

Michael Bordo, Rutgers University, and Antu Murshid, University of Wisconsin-Milwaukee, presented research on the cross-country transmission of shocks in financial markets. They examined two periods, 1880–1913 and 1975–2000, which share a similar extent of financial globalization and incidence of currency crises. In the earlier period, the worldwide comovement was stronger; however, in the later period the comovement was stronger within regions than worldwide. Today, the financial crises seem to be contained to the emerging markets. Franklin Allen, University of Pennsylvania, and Douglas Gale, New York University, find that international stock market interlinkages can either reduce or exacerbate the extent of asset price bubbles, depending on the amount of credit that is provided for speculative

investment. Opening up a market to foreign investment can expand the volume of credit and create uncertainty about the amount of credit in the future, leading to a potential bubble in asset prices. Greater reliance on foreign ownership of banks and the use of foreign markets for diversity in deposit and loan sources can help insulate a country from a bubble crisis, according to Gerard Caprio, Jr. and Patrick Honohan of the World Bank.

Next, Robert Shiller, Yale University, expanded on the theme and framework of his recent book, *Irrational Exuberance*.² Shiller argued that there was clearly a bubble operating in the 1990s. To explain this, he borrows the tools of other social sciences, allowing him to go beyond the explanatory power of the rational expectations paradigm so often used in economics. “There are in fact many intellectual traditions that I find relevant to understanding asset price bubbles,” said Shiller. He provided a number of precipitating, amplifying, and mediating factors for the existence of a bubble. The advent of the World Wide Web was one of the larger precipitating factors. The amplification mechanics, causing price increases to beget further price increases, work as a “naturally occurring Ponzi scheme,” according to Shiller. Investor overconfidence also contributes to this. Shiller reported the results of a survey that showed that 90% of investors thought that the stock market would go up over the subsequent year at the height of the bubble. Also, previous historical stock market peaks, such as in 1901, 1929, 1966, and the 1990s, have been associated with “new economy” stories.

In order for there to be a bubble, stocks must trade at prices much higher than suggested by their fundamentals. For so-called new economy firms, which may be able to utilize large productivity gains from the Internet and other new technologies, how should these fundamentals be measured? Steven Kaplan, University of Chicago, explained that many technology companies had such high valuations because analysts believed that they would deliver large reductions in transaction costs. The valuations fell

as people realized that this might not occur. This is consistent with rational, if wildly off-target, behavior on the part of market participants.

Marvin Goodfriend, Federal Reserve Bank of Richmond, argued forcefully against the idea that monetary policy should react to asset prices. First, he said, there is no theoretical basis for it. Both monetary policy and asset prices are endogenous variables that react to shocks in the system. If the central bank acts preemptively against inflation, there is little reason to believe that monetary policy should influence asset prices. His research also shows that the targeting of asset prices in Japan in the late 1980s, or the U.S. in the late 1990s, would not have improved monetary policy. Discussant Benjamin Friedman, Harvard University, agreed, adding that targeting of asset prices can cause a dangerous feedback loop, in which asset prices react to what market participants think the central bank will do.

Others, however, believe that, since asset prices do stray from their fundamental values, the existence of bubbles should be included in the formation of monetary policy. Michael Mussa, Institute for International Economics, in a keynote speech, argued that, “central bankers and other policymakers should not be ideologues on this issue. They should keep their ears open and be prepared to act appropriately.” In the

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boom of 1999, asset prices were having macroeconomic effects despite the slow pace of inflation. “Strong growth of consumption spending, despite an already low personal savings rate, suggests that high equity values were having an important impact on aggregate demand,” according to Mussa. Any move at this stage by the central bank could be unpopular; however, Mussa suggested that they should emphasize the macroeconomic stabilization benefits of such a move.

Stephen Cecchetti, Ohio State University, Hans Genberg, Graduate Institute of International Studies in Geneva, and Sushil Wadhvani, Bank of England, argued that a central bank might improve its macroeconomic performance by considering asset price bubbles beyond the effect they have on forecasts of inflation, which are already used in policy formation. They said that central bankers might be in a better position to react to bubbles over the long term than market participants. Also, inflation forecasts may lack relevant information needed for monetary policy formation that is contained in asset prices.

There may also be a role for financial regulators, as opposed to central bankers, in ameliorating or preventing the impact of asset price bubbles. Charles Goodhart, London School of Economics, described recent patterns of business cycles as containing large asset price movements. Prudential bank regulation can reverse the procyclical effect that

banks have on these price movements. He suggested that banks be required to pre-provision for loan losses over the course of the cycle and capital adequacy requirements be conditioned on the rate of growth of bank lending. Jeffrey Carmichael and Neil Esho, Australian Prudential Regulation Authority, used the lessons of Australia’s experience with asset price cycles to show that the health of the banking system affects the likelihood of bubbles leading to financial crises. They also advocated modifying bank loan loss provisioning requirements to reduce procyclicality and stress testing of bank portfolios for risk exposure, but argued portfolio restrictions and adjustments in capital requirements were too blunt and inefficient to use in helping control asset price cycles. The financial cost of crises is inversely related to the quality of financial skills and services in a country, according to Michael Pomerleano, World Bank. Having more financial analysts, appraisers, actuaries, and insolvency professionals available allows a country’s institutions to better brace against the effects of the bubble. Also, having more market-based instruments, such as asset securitization and secondary loan markets, improves the recovery from asset bubble crashes.

Conclusion

A number of experts in the final session of the conference detailed their ideas for protecting against the effects of asset bubbles. Jaime Caruana, Governor

of the Bank of Spain, explained the forward-looking, loan-loss provisioning introduced recently in Spain and admired by some of the conference participants. It gives banks a greater incentive to use better risk-management techniques, and it is countercyclical. Asset price bubbles are here to stay, according to Vincent Reinhart, Board of Governors of the Federal Reserve System, so we had better get used to them. Attention must be paid to asset prices, but macroeconomic policy should be geared toward macroeconomic outcomes. Financial regulators can help mitigate the negative consequences of bubbles by making their systems more diversified. Anthony Neoh, China Securities Regulatory Commission, concluded the final session by agreeing with Reinhart on the inevitability of asset price bubbles and the need for effective financial regulatory structures to soften their effects. Improved market transparency and reduced moral hazard from implicit government guarantees are necessary to keep financial markets healthy and protected against the worst consequences of bubbles.

¹ A conference proceedings volume, *Asset Price Bubbles: The Implications for Monetary, Regulatory, and International Policies*, Boston: MIT Press, will be available in December 2002.

² Robert Schiller, 2000, *Irrational Exuberance*, Princeton, NJ: Princeton University Press.