

## Chapter 1

# Asset Price Bubbles, Information, and Public Policy

Randall S. Kroszner\*  
*Council of Economic Advisers*

### 1. Introduction

The issue of asset price bubbles is by no means a new one. Studies of such well-known putative bubbles as the Dutch tulip mania in the 17th century and the South Sea bubble in the 18th century have long fascinated economists. Despite the persistent interest in such phenomena, asset price bubbles are still not well understood.

Asset price bubbles represent a challenge to researchers and policymakers because some fundamental questions have not been answered in a convincing manner: How does one define an asset price bubble in a practical way? How can we identify an asset price bubble? If a bubble could be identified and measured, how should a policymaker respond? I commend the conference organizers for putting together such an impressive list of academic researchers, policy researchers, and policymakers in order to address the important issue of asset price bubbles. I am confident that the conference will yield a better understanding of the policy implications of asset price bubbles.

I will discuss the issue of asset price bubbles, focusing on the role of information and implications for public policy. I will start with some observations about the difficulty of identifying asset price bubbles from a practical view as a policymaker. The ability to identify asset price bubbles would be critical if a policymaker were interested in pursuing a policy to deflate bubbles. Even though I will argue that identifying bubbles is fraught with peril, there is, nonetheless, an important role for policymakers in addressing the possibility of asset price bubbles. Asset price bubbles—if they exist in a meaningful way—represent a mispricing of asset values by the market. The well-established principles of market efficiency provide insights on how to design policies that could improve the flow and accuracy of information for pricing assets and, therefore, could help to reduce the likelihood that an asset price bubble could form. I will then close with a discussion of recent Bush administration policies that go a long way

toward strengthening financial markets through a more effective exchange and provision of information in the marketplace.

## 2. Identifying Asset Price Bubbles

One way to understand the practical implications of asset price bubbles for public policy is to appreciate how much economists know, and do not know, about identifying asset price bubbles. To be sure, there are economists and many journalists who claim they “know” when an asset price bubble is forming. Such knowledge sells books and magazines. However, the research record on asset price measurement is far from being sufficient to build a policymaker’s confidence.

Identifying asset price bubbles is quite difficult both *ex ante* and *ex post*. Kindleberger (1996), for example, maintained that asset price bubbles are often defined by their time series behavior. An asset price that soars and then subsequently crashes is the standard example of what many think of as bubble behavior. To motivate how such pattern recognition creates problems for policymakers, I prepared a few charts with which to play the game that I would like to call “Is it a Bubble?” We will look at a chart without its labels and try to guess whether it represents an asset price bubble. For example, figure 1 is a flat line. Is it a bubble? Most economists using the chartist view of bubbles might disagree that this is *prima facie* evidence of a bubble. Figure 2 helps to answer the question by revealing that the flat line represents the value of the Argentine peso from 1997 to 2002. During this period, the Argentine currency board established a fixed exchange rate between the peso and the U.S. dollar. This figure also shows that in January 2002, the Argentine peso depreciated sharply. I would agree that the depreciation moved the peso closer to the value that markets assessed the fundamentals to support. The Argentine situation illustrates how a flat asset price not only fails to indicate a lack of financial stress but also that a sharp change in an asset price can represent a restoration of an asset price toward a more appropriate market rate.

Further lessons can be learned by comparing the behavior of U.S. equity values over time. Figure 3 shows five periods in which the Standard & Poor’s 500 rose rapidly. Which episodes represent bubble behavior? Once again, patterns can be deceiving. Figure 4 illustrates this point by showing that all the run-ups in stock prices are not followed by sharp and persistent collapses. From the vantage point of the peaks in 1956 and 1987, the rapid run-up in prices, which were of a similar size to those of 1929 and 1937, were not foreshadowing an imminent and precipitous decline.

The increase in equity prices in the 1990s presents a particularly apt example for this conference to consider. During the five-year period before the peak in 2000, the increase in equity prices was well within the historical movements of the other five earlier episodes. One question is whether there was some way to know that the asset price increase during the 1990s was a bubble or economic fundamentals. The increase in equity prices could have reflected fundamental changes in the U.S. economy as new technologies were altering the economic landscape. During this period, for example, labor productivity began growing at a much faster rate than in the past two decades (figure 5). The setback in 2000 may have reflected a change in fundamentals,

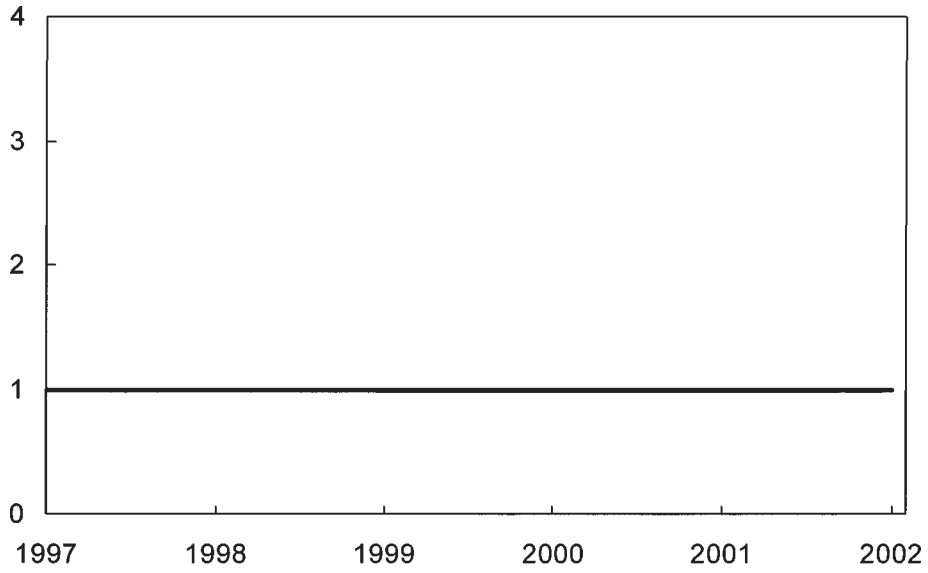


Figure 1: Is It a Bubble?

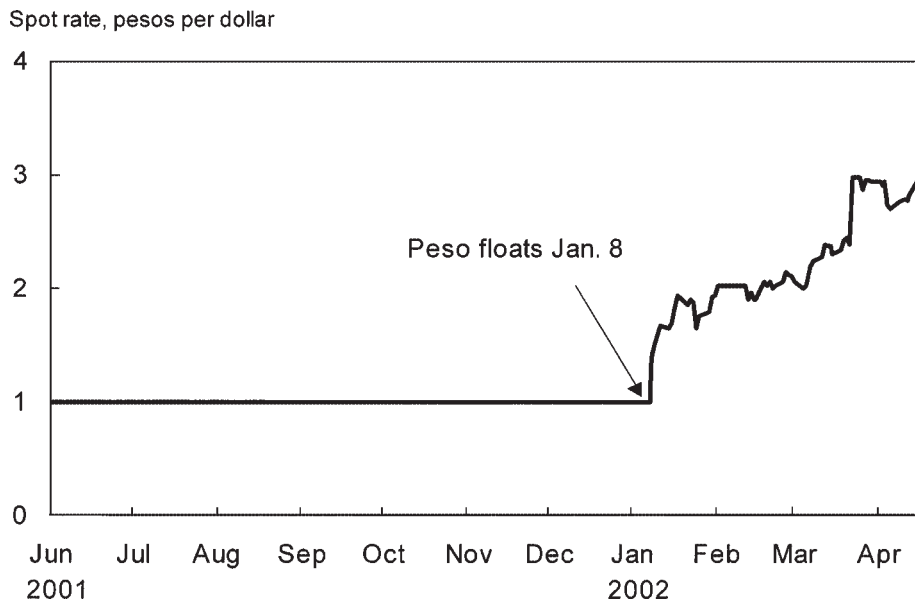


Figure 2: Argentine Peso

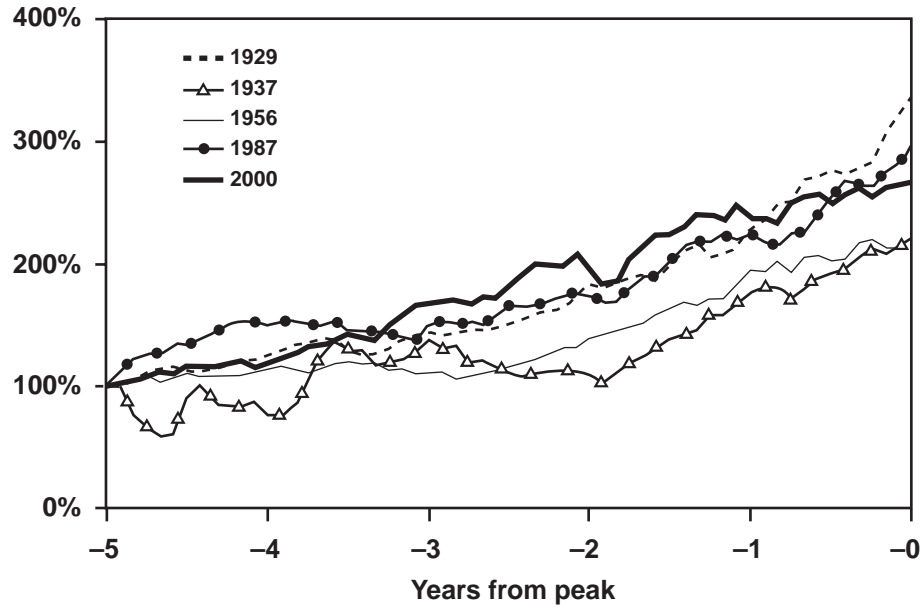


Figure 3: S&P 500: Five Years before Local Peak

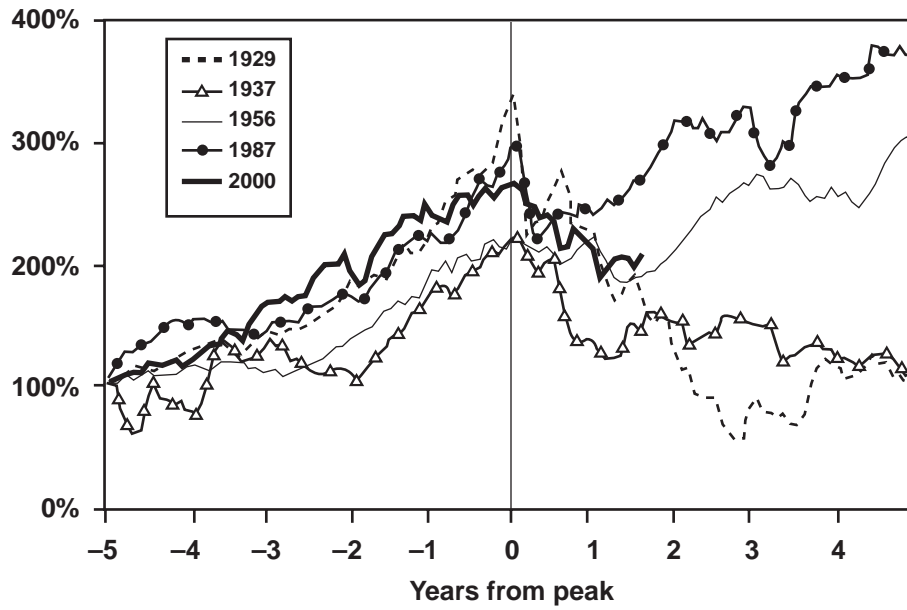
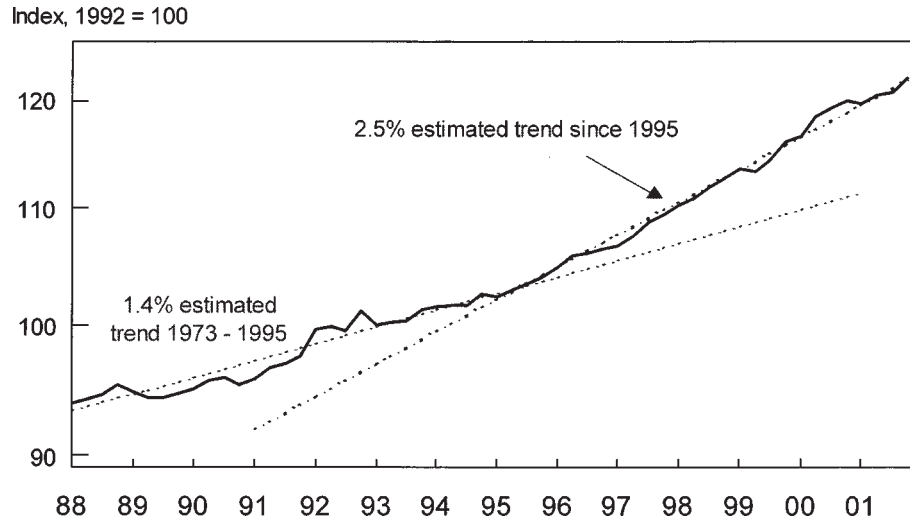


Figure 4: S&P 500: Five Years before and after Local Peak



**Figure 5: Nonfarm Labor Productivity**

such as the information that the some overly optimistic possibilities of the “new economy” were less likely to occur. On the other hand, the dramatic rise in stock prices could have been the result of an asset price bubble. From a policy perspective, there is a big difference between the collapse of an asset price bubble and a change in economic fundamentals that leads rational investors to re-evaluate earnings potential. Without a doubt, policymakers in the 1990s were finding it difficult to determine if asset prices were exhibiting asset bubble behavior or simply reflecting economic fundamentals.

Another equally important question is whether with hindsight the run-up in asset prices in the late 1990s was a result of asset price bubble behavior. My reading of the academic literature leads me to conclude that this question is quite difficult to answer in a convincing way. In fact, McGrattan and Prescott’s paper (2002) for this conference is a fascinating study because the authors raise doubts about whether the famous stock market crash of 1929 was a stock market bubble both from an *ex ante* and *ex post* perspective.

The inability to identify asset price bubbles *ex ante* should be sufficient reason for policymakers to be cautious about taking pre-emptive actions to deflate an asset price bubble. The inability to identify asset price bubbles *ex post* not only reinforces this cautious approach but also should cause policymakers to take pause about whether the rhetoric of asset price bubbles is a useful concept for policy discussions.

### 3. The Role of Public Policy

Given the difficulty of identifying asset price bubbles, the natural follow-up question is: What should be the role for policymakers? While knowing when to “deflate” an asset price bubble may be beyond the ability of economists, are there other policies

that policymakers should pursue? To answer this question, we need to delve into the source of an asset price bubble—the mispricing of assets.

Having taught at the University of Chicago for more than a decade, I understand quite well that the issue of asset pricing—and their mispricing—is serious business. Standard finance theory offers several ways to think about how markets incorporate information into asset prices. The *weak-form market efficiency* criteria state that market asset prices reflect only information contained in the history of prices or returns themselves; the *semi-strong market efficiency* criteria state that market asset prices reflect all information known to all market participants (all public information); and strong-form market efficiency criteria state that market asset prices reflect all information known to any market participant (all public and private information). It is through this theoretical lens that policymakers can evaluate the appropriate responses to concerns about whether assets are being efficiently priced.

We can conceptualize these microfoundations of asset pricing by reflecting on the thought process that an investor undertakes when she sees that a firm's stock price has risen. The higher price has two possible explanations. The price could be the reflection of improved "fundamentals"—that is, new information about the firm's better prospects quickly embedded into its price. Alternatively, the higher price could be the reflection (at least in part) of "irrational exuberance" about the firm's prospects. This irrational exuberance creates a bubble, since the stock price does not reflect fundamentals alone. The investor's puzzle or inference problem is to determine which of these two possibilities is most likely correct and, therefore, whether to buy or sell that company's stock.

A public policy implication is that better information, easily accessible to *all* investors, makes bubbles more difficult to form and to be sustained. Reconsider our individual investor, attempting to infer (fundamental) information about a company's stock price. Improved public information has two reinforcing effects. First, the individual investor (or her financial advisor) can examine the firm's financial statements and Securities and Exchange Commission (SEC) filings and make a judgment about the firm's prospects compared to the current stock price. Second, the individual investor can be confident that she is not missing relevant information that is available to other market participants. When a price seems to outstrip fundamentals, an investor logically asks whether it is a bubble or whether she does not have access to important information about fundamentals. So it is important that information is available not only to select individuals, but to the general public.

Recent academic work suggests particular avenues through which public information can prevent bubbles from forming. For example, Allen and Gale's paper (2002) for this conference, building on their earlier work, identifies the agency relationship as a key transmission mechanism in the formation of bubbles. The authors' core agency example is that banks lend funds for projects without being able to observe the riskiness of the investments made by the project manager. Because of limited liability (in case of default), the agency problem initiates bubbles; the price of the risky asset can be driven above its fundamental value because the project manager does not fully bear the downside risk. Another application Allen and Gale offer is to the stock market. Here a major agency issue is that investment choices are largely made by institutional

investors or other intermediaries. Indeed, the incentives for risk-taking by mutual fund managers due to the agency problem have been documented by Chevalier and Ellison (1997).

More broadly, the agency problem arises from an asymmetry of information. In Allen and Gale, for example, the project manager, acting as an agent of bank investors, has unobserved information and takes an unobserved action that affects investors' returns. In the current policy environment, the agency problem is exacerbated because of uncertainty about valuations due to well-publicized problems with accounting standards. If banks lack trust in the accuracy of the accounting standards, then the agency problem grows.

So, the clear policy lesson to be drawn from this literature is the importance of improving transparency. Better public information diminishes these agency problems, especially by reducing information asymmetry and uncertainty about the economic environment. With more accurate and complete information, heightened competition among intermediaries would enhance incentives to align the intermediaries' interests with those of their clients—the individual investor—and, therefore, lead to a more successful assessment of the risks taken with their clients' funds.

#### **4. Two Administration Proposals to Strengthen Market Efficiency**

Better disclosure of information and clearer rules have been a priority for the Bush administration. In a sense, the administration's recent efforts have been intended to improve market efficiency by moving financial markets closer to a strong form of market efficiency. Let me turn to two such proposals aimed at strengthening financial markets.

##### ***4.1 The President's Plan to Strengthen Retirement Security***

At the 2002 National Summit on Retirement Saving, the president outlined the key components of his agenda to strengthen retirement security. One of the key components was a provision to expand workers' access to investment advice, a measure that encourages employers to make investment advice available to workers and allows qualified financial advisors to offer individualized investment advice only if they agree to act solely in the interests of the workers they advise. At present, the Employee Retirement Income Security Act (ERISA) generally impedes employers from obtaining investment advice for their employees from the financial institutions that often are in the best position to provide advice. In addition, federal liability standards on employer-sponsored investment advice are vague and confusing. As a result, millions of rank-and-file workers today are needlessly denied tools they could be using to make sound investment decisions and enhance their retirement security. Only 16 percent of 401(k) participants have an investment advice option available through their retirement plan. In other words, 84 percent do not. Breaking down these barriers in order to enable investors access to valuable information about their retirement funds is important.

The president's agenda for pension reform paves the way for employers to arrange for investment advice to be given to their employees—which will help to

provide better information to investors, reduce uncertainty, and generally reduce the likelihood that deviations between market prices and fundamental valuations will arise. To this end, the administration supports H.R. 2269 (Retirement Security Advice Act) which would help American workers to better manage their retirement savings by expanding the availability of investment advice. This bill also would place advisers who have affiliations with investment products on a more equal footing with non-affiliated advisers, foster competition among firms, and promote lower costs to participants. H.R. 2269 would afford certain plan participants access to advice from fiduciary advisers, who are regulated by federal or state authorities. As fiduciaries under ERISA, these advisers would be held to the standard of conduct currently required by ERISA. H.R. 2269 also would add important protections to ERISA, by providing information to participants about fees, relationships that may raise potential conflicts of interest, and limitations on the scope of advice to be provided.

There are many important benefits to this bill. The bill updates an outdated federal law to allow employers to provide their workers with access to high-quality professional investment advice as a benefit to their employees. The measure clarifies employer liability, thereby removing the barrier to employers contracting with advice providers and their workers. No employee is under any obligation to accept or follow any advice. Workers, not their advisers, will have full control over their investment decisions. By modernizing an outdated section of ERISA, Congress can help workers plan for their retirement more wisely, maximize their retirement security, and minimize their risk. The more education investors receive, the better equipped they will be to deal with the risk of market volatility, make the choices that best serve their long-term needs, and protect and grow their hard-earned retirement dollars. The bill fosters a competitive, dynamic marketplace for investment advice that serves worker needs and establishes a strong, protective framework that safeguards their interests.

#### ***4.2 President Bush's 10-Point Plan on Financial Disclosure***

In recent months the U.S. system of corporate financial disclosure has come under scrutiny. The U.S. capital markets remain the largest, most transparent, and most liquid in the world. Nonetheless, this system can and should be improved.

In his speech in March, President Bush outlined his 10-point plan (see appendix for details) to improve corporate financial disclosure and to enhance shareholder protection. This plan is guided by the following core principles: 1) providing better information to investors; 2) making corporate officers more accountable; and 3) developing a stronger, more independent audit system. Each of these elements will improve the access to information and make mispricing less likely in the future. The administration supports the enactment of H.R. 3763 (Corporate and Auditing Accountability, Responsibility, and Transparency Act of 2002) as an important step toward improving corporate responsibility and is consistent with the president's 10-point plan.

The president's plan provides better information to investors. First, the president has directed the SEC to require companies to disclose quarterly information in its control that a reasonable investor would find necessary to assess a company's value, without compromising competitive secrets (point No. 1). Disclosure practices have



fallen behind advances in corporate finance. Moreover, too many firms have mistaken “check the box” compliance with GAAP (generally accepted accounting principles) for proper disclosure. The president’s plan refocuses companies on what constitutes proper disclosure in today’s business environment. Second, the president has directed the SEC to expand the list of significant events requiring disclosure between quarterly reporting periods (point No. 2). These steps will aid investors in understanding the underlying economics of public firms, and so help distinguish future business and investing opportunities from future speculative bubbles.

Enhancing the accountability of corporate leaders is also crucial to restoring trust in our system. Chief executive officers (CEOs) should personally vouch for the veracity, timeliness, and fairness of their companies’ public disclosures, including their financial statements (point No. 3). In addition, CEOs should be forced to disgorge any bonuses or incentive based compensation in cases of accounting restatements involving misconduct (point No. 4) and should be barred from holding such positions in publicly traded companies in the future in cases of serious misconduct (point No. 5). The president is proposing that companies disclose stock transactions by officers and directors in company stock within two business days of execution (point No. 6). Currently corporate leaders can go as long as a year without disclosing personal transactions with the company and as long as 40 days for open market transactions.

Corporate governance remains largely an issue for state law and market discipline. But the federal government can play an important reinforcing role. For example, the growth of stock-based or incentive-based compensation for CEOs addresses a genuine interest of shareholders in aligning executives’ interests with their own. But an imperfectly crafted compensation plan could lead some executives to engage in actions that manipulate the stock price to their own benefit. Forcing such gains to be returned to the shareholders in cases of misconduct ultimately serves shareholder interests by making incentive-based compensation plans more effective. Moreover, this mandatory disgorgement makes mispricing less likely, since CEOs will not reap rewards from misconduct that inflates the share price. Thus, market efficiency is strengthened.

Developing a stronger, more independent audit system is the final element of the president’s plan. Investors also depend on the judgment, integrity, and competence of independent auditors. While auditors cannot prevent intentional deceit, they provide a critical external check on corporate management. Under the president’s plan, audit company independence will be assured by SEC restrictions on providing services that compromise such independence. This addresses possible conflicts of interest. The president has directed the SEC to set forth prohibitions against the performance by an outside auditor of internal audit services for the same client. In addition, other non-audit services would not be prohibited under the president’s plan, but clients would have to disclose in greater detail the fees paid to the auditing firm and its affiliates (point No. 7). Moreover, an independent regulatory board should ensure that the accounting profession is held to the highest ethical standards (point No. 8).

The authors of accounting standards must be responsive to the needs of investors (point No. 9). The president has called upon the SEC to exercise broader oversight of the Financial Accounting Standards Board, ensure its independence, and require promul-

gation of standards that reflect economic reality rather than compliance with GAAP. Finally, firms' accounting systems should be compared with best practices, not simply against minimum standards (point No. 10).

Although I have a great appreciation and respect for the role accountants play in the financial reporting system, as an economist I cannot help but smile at the notion that economic principles will play a larger role in accounting standards. The strengthening of accounting and auditing systems will provide greater information and transparency to investors. Indeed, my previous academic work (Kroszner and Rajan, 1994, 1997) suggests that the presence of conflicts of interest will result in the voluntary adoption of institutions that ameliorate such conflicts. And, in the present case we are already seeing market penalties that are acting to reward more transparent disclosure. The president's plan is helping to reinforce powerful market incentives.

## 5. Conclusion

The traditional questions associated with asset price bubbles continue to interest policymakers today. The economics literature on asset price bubbles, however, does not offer many convincing answers. Economists still have much research to do in order to improve our understanding of this phenomenon and its implications for public policy. The conference organizers should be commended for tackling an important, and vexing, policy issue.

A fundamental problem for policymakers in the past, the present, and probably the future is the ability to identify asset price bubbles *ex ante*, or even *ex post*. Without confidence that bubble conditions exist, policymakers must be wary about responding to an apparent asset price bubble because the response may result in more harm than good. This does not mean that there is no role for the public policymaker. As we have seen with the president's recent proposals, such as the 10-point plan for financial disclosure and reforms of rules governing 401(k) retirement accounts, public policies can help remove barriers to the effective exchange and provision of information, thereby strengthening markets and reducing the likelihood of asset mispricing.

\*Randall S. Kroszner is a member of the President's Council of Economic Advisers. He is currently on leave from the University of Chicago's Graduate School of Business where he is a professor of economics and from his positions as editor of the *Journal of Law & Economics* and associate director of the George J. Stigler Center for the Study of the Economy and the State. He is also a faculty research fellow of the National Bureau of Economic Research.

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## Appendix

### *President Bush's 10-Point Plan on Financial Disclosure*

1. Each investor should have quarterly access to the information needed to judge a firm's financial performance, condition, and risks.
2. Each investor should have prompt access to critical information.
3. CEOs should personally vouch for the veracity, timeliness, and fairness of their companies' public disclosures, including their financial statements.
4. CEOs or other officers should not be allowed to profit from erroneous financial statements.
5. CEOs or other officers who clearly abuse their power should lose their right to serve in any corporate leadership positions.
6. Corporate leaders should be required to tell the public promptly whenever they buy or sell company stock for personal gain.
7. Investors should have complete confidence in the independence and integrity of companies' auditors.
8. An independent regulatory board should ensure that the accounting profession is held to the highest ethical standards.
9. The authors of accounting standards must be responsive to the needs of investors.
10. Firms' accounting systems should be compared with best practices, not simply against minimum standards.