

## Asset Price Instability and Policy Responses: The Legacy of Liberalization

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The problem of asset price bubbles, and more generally of instability in the financial system, has been a matter of concern since the 1980s but has only recently moved to the center of the macroeconomic policy debate. Among the events contributing to concern about asset prices, the most notable have been the boom and bust in share prices, particularly those of technology stocks such as "dotcoms," and the subsequent boom in property prices. These asset price movements have been experienced, to varying degrees, in most OECD economies, including the United States, the United Kingdom, and (in the case of housing) Australia. Earlier episodes of boom and bust have affected East Asia, the Nordic countries, Mexico, Russia, parts of Latin America, and, most notably, Japan.

The main concern with bubbles arises when they burst, imposing losses on investors holding the bubble assets and potentially on the financial institutions that have extended credit to them. Financial stress might be limited to the failure of individual financial institutions that become overextended during the boom. Increasingly, however, the kinds of financial distress being encountered are systemic, with many institutions operating in a similar mode and simultaneously miscalculating and confronting difficulties. This implies trouble for a wide range of institutions with the strong potential for flow-on effects in the real economy, perhaps leading to a recession or debt deflation. There is no room in this paper to delve into the history of such crashes other than to note that the costs of dealing with banking crises through bailouts and recapitaliza-

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tion during the 1990s ranged from 5 percent to 40 percent of GDP, with even larger effects in terms of lost output (Macfarlane 1999, table 1).

As the frequency and severity of asset price fluctuations, including putative bubbles, has increased, there has been a corresponding increase in interest in measures that may prevent the emergence of bubbles or to seek gradual deflation of bubbles rather than catastrophic busts. Most attention has focused on the idea of making asset price stability a target of monetary policy, either in its own right or as a signal of incipient consumer price inflation. To deal with asset inflation Claudio Borio and Philip Lowe (2003) have called for a "subtle shift" in a policy paradigm based on inflation targeting. There has also been some consideration of a possible role for prudential policy (Schwartz 2002).

Subtle as these policy shifts may appear, they nevertheless involve a fundamental change in thinking about the role of financial markets. In the deregulated system, the task of allocating investment capital and consumer credit between individuals, firms, and nations is left to financial markets. As Jeffrey Carmichael and Neil Esho (2001) have observed, intervention aimed at changing asset prices and other financial market outcomes, such as "excessive" credit growth, are logically inconsistent with the "deregulated" framework of monetary policy and financial regulation that emerged in the wake of breakdown of the Bretton Woods system in the 1970s. This framework was based on the efficient markets hypothesis.

As Borio and Lowe (2003, 113) have observed, framing the debate in this way "can easily see it stray into almost ideological territory, unnecessarily pitching supporters and skeptics of 'market efficiency' against each other." Borio and Lowe regard this division as a source of artificial difficulties. In this paper, we argue on the contrary that the role of the efficient markets hypothesis is crucial and cannot be disregarded. It follows that the debate must have an ideological, as well as a technical, character. Any serious attempt to stabilize financial market outcomes must involve at least a partial reversal of deregulation.

This paper is organized as follows. We begin with a brief survey of the empirical literature on asset price bubbles and asset price volatility, with particular emphasis on the period following financial deregulation. This is followed by a survey of the theoretical literature on asset prices and the efficient markets hypothesis. Next, the recent debate on possible policy responses to asset price bubbles is critically assessed. In the main section of the paper, we develop the argument that no effective response to asset price bubbles is feasible within the current policy framework and consider possible alternatives. Finally, some concluding comments are offered.

### ***Asset Price Bubbles and Asset Price Volatility***

Borio and Lowe (2002) presented data collected by the Bank of International Settlements (BIS) on trends in asset markets across a range of countries since the early

1970s. Asset classes surveyed were equities, commercial and residential property, and a weighted aggregate measure of asset prices derived from these components.

Borio and Lowe discerned the following trends. First, equity prices tend to lead asset price upswings and are also the most volatile, followed, respectively, by commercial and residential property. Second, the aggregate asset data, in particular, reveal three broad cycles of asset inflation since the early 1970s, roughly corresponding to the early to mid 1970s, the mid 1980s to the early 1990s, and the mid 1990s to the present. Third, the amplitude and length of the cycles appears to be growing, with the latest upswing being driven mainly by equity markets.

In addition to these fluctuations in national asset markets, it is important to consider the behavior of exchange rates. When the Bretton Woods system of fixed exchange rates was abandoned in the early 1970s, it was expected that financial market transactions would act to stabilize exchange rates, eliminating the periods of severe overvaluation and undervaluation associated with fixed exchange rate regimes. In reality, the volatility of exchange rates increased substantially following the move to floating currencies.

Growth in the volatility of asset prices has been one of a number of inter-related developments associated with the end of financial repression which have served to increase both the gross volume of financial transactions and average levels of net indebtedness of households, business enterprises, and governments.

Borio and Lowe (2002) and others, such as Charles Goodhart (1999), point to the links between asset price inflation and credit growth. In most industries, as supply increases, prices and profits are squeezed, thus limiting expansion in the sector. This is not necessarily true of the financial sector. Once under way, a credit expansion will tend to boost output and push up asset values through leveraged acquisitions, thus promoting further credit expansion (Crockett 2001). Upswings in asset prices have been associated with high rates of growth in the volume of credit. There is also evidence linking credit growth to banking crises and periods of financial stress (Bell and Pain 2000; Eichengreen and Areta 2000). As the BIS argued in its 2001 Annual Report,

Financial factors have long played a role in shaping business cycles. However, as domestic financial systems and international capital flows have been liberalized, this role has grown. Developments in credit and asset markets are having a more profound effect on the dynamics of the typical business cycle than was the case a few decades ago, and have also contributed to the increased frequency of banking system crises. (123)

Hence, as a consequence of financial liberalization, the links between the workings of the financial system and the health of the economy have become tighter. This connection is heightened by increased levels of business and household debt exposure in recent years and by the entry of pension funds and small investors to equity and property markets. While the broad link between credit growth and asset inflation seems clear, the exact dynamics of the relationship are still poorly understood. Borio and Lowe (2002) have

argued that because of the limited nature of the existing research we are still unable to answer questions such as when credit growth should be considered “excessive,” what the cumulative effects of credit expansions might be, or how credit booms might interact with other financial imbalances.

On the demand side, borrowers have been eager to increase their gearing. An important factor behind this has been price. The achievement of low inflation in many countries in the 1980s and 1990s has seen a very substantial reduction in interest rates and the cost of borrowing. Hence, while debt-income ratios among firms and households have risen steeply across many countries in recent years, debt-servicing ratios and interest-income ratios have remained relatively stable. Lower real interest rates have made debt more affordable and encouraged higher borrowing. Money illusion associated with lower nominal interest rates has also tended to play a role in promoting higher gearing, as have the wealth effects born of rising asset prices.

Low inflation or monetary stability is also implicated in asset inflation in another way. Conventional wisdom holds that sharp fluctuations in inflation could destabilize the financial system, for example, by increasing the cost of debt if inflation suddenly falls. Similarly, high inflation tends to encourage debt-based asset acquisitions and other forms of speculative behavior. Hence, monetary stability and financial stability have tended to be seen as complementary. This does not, however, mean that monetary stability and financial instability are mutually exclusive. Three of the biggest asset bubbles in the twentieth century—America’s in the 1920s and 1990s and Japan’s in the late 1980s—occurred in a low inflation context. In Japan in the late 1980s, CPI inflation remained at close to zero while equity prices almost tripled and commercial property in Tokyo more than tripled. More generally, inflation in most developed countries has been low in the last decade but financial instability has increased.

While asset price volatility is of interest in itself, the crucial issue is whether asset price bubbles or other symptoms of financial volatility are precursors of financial and economic crises. Evidence on this point is mixed. On one hand, the volatility of GDP growth has generally declined since the 1980s in most OECD countries. Olivier Blanchard and John Simon (2001) and James Stock and Mark Watson (2003) showed that all G-7 countries except Japan have experienced a decline in volatility in recent periods. Richard Clarida, Jordi Gali, and Mark Gertler (2000) have argued that a systematically more decisive and more transparent monetary policy has been the key source of the decline in volatility of the U.S. economy. The implementation of such a policy is presumably contingent on the same deregulated financial structure that has given rise to increased asset price volatility.

On the other hand, average growth rates for OECD countries have been lower since 1980 than before. Moreover, inequality has increased, and the wage share of income has declined (Dollar 2004). These trends have been most marked in the United States but have become more general among OECD countries since 1990. Although many factors contribute to increasing inequality, greater volatility in individual income and wealth leads naturally to greater inequality, as accidents of timing benefit some indi-

viduals and harm others. Higher volatility in asset prices tends to produce higher risk premiums and therefore higher average returns to capital.

Asset price booms and slumps have been the primary cause of economic fluctuations since financial deregulation. This is most obvious in the case of Japan, but Australia, the United Kingdom, and a number of Scandinavian countries all experienced severe recessions following the collapse of asset price booms in the late 1980s. Borio and Lowe (2003) proposed a composite indicator based on divergences of asset prices and credit volumes from their long-term trend. The primary weight is placed on asset prices. Borio and Lowe have shown that, over a three-year horizon, their indicator predicts 60 percent of crises, with a very low rate of false positives.

The outcome of the current economic cycle in the United States will be crucial in assessing the relationship between financial and real volatility. It appears that real volatility has increased since the late 1990s and that this increase can be attributed, in large measure, to the boom and slump in stock prices and to the continuing boom in real estate prices. But to reach a final evaluation, it is necessary to wait until continuing imbalances in household and national indebtedness, arising from these fluctuations, have been resolved or stabilized.

### ***Theoretical Analysis of Asset Price Bubbles***

#### *Asset Prices and the Efficient Markets Hypothesis*

The crucial theoretical assumption underlying financial deregulation is the efficient markets hypothesis. In its strongest form, the efficient markets hypothesis states that all relevant information in any financial transaction is contained in the price of the associated asset and hence that markets contain the best estimate of the value of any asset, including equities. Slightly relaxed versions admit to adjustment lags or information gaps (of the kind that might justify the work of professional market analysts), but these are seen as minor issues, with the implication being that equity markets, for example, cannot become substantially “over” or “under” valued.

The existence of asset price bubbles appears to contradict the efficient markets hypothesis and therefore to imply a violation of the premises from which the hypothesis is derived, including rational optimization by individuals and the efficiency of competitive markets. Hence, in a policy framework based on this hypothesis, it is necessary to accept fluctuations in asset prices as market outcomes. There may perhaps be room for marginal interventions when asset prices seem clearly out of line with fundamentals, as in the case of “dirty floats,” but there is no room for systematic intervention.

To the extent that asset price bubbles are seen as a serious economic problem, any feasible response must involve some return to policies of financial repression. Such policies might include qualitative controls that restrict the allocation of credit for investments in assets seen as subject to overpricing and restrictions on financial innovations,

particularly where such innovations derive their supposed value from unsound speculative arguments about asset prices.

### *The New Classical View*

Although the existence of asset price bubbles seems obvious in the light of historical experience, it is by no means universally accepted. The most important challenge comes from “new classical” models, which rule out the phenomena discussed in this paper. The central assumptions in new classical models are that markets are flexible, that information is close to perfect, and that markets reach equilibrium and clear continuously. Temporary disequilibrium might arise due to some kind of exogenous shock, but flexible markets are assumed to quickly re-equilibrate. Price movements are a “random walk” generated by the arrival of new information. In such a world, the miscalculations and erroneous valuations characterized by bubbles and crashes are assumed to be impossible. Thus, the new classical view of financial markets is summarized in the various forms of the efficient markets hypothesis.

### *Neoclassical Views on the Efficient Markets Hypothesis*

Within the mainstream of neoclassical economics, a range of views on the efficient markets hypothesis may be observed, illustrated by a recent debate between Burton Malkiel and Robert Shiller. Malkiel (2003) argued that the efficient markets hypothesis is generally valid but conceded that there are occasional episodes of irrational pricing, including the dotcom bubble of the 1990s (see also Jeremy Siegel, “Are Internet Stocks Overvalued? You Bet,” *The Asian Wall Street Journal*, April 21, 1999, and Eduardo Porter, “The Perils of Predicting Financial Bubbles,” *The New York Times*, July 25, 2004). By contrast, Shiller (2000, 2003) argued that the efficient markets hypothesis is routinely violated, so that variations in stock market prices are not, in general, the result of new information about the value of future earnings streams. Most neoclassical economists hold views somewhere in the range between these positions.

The central point of Malkiel’s argument in favor of the efficient markets hypothesis is that violations of the hypothesis will allow rational speculators to make unlimited riskless profits, or at least earn large returns without incurring a commensurate risk. If this argument is valid, the existence of even a small number of rational investors precludes the emergence of asset price bubbles.

It is not clear, however, that rational speculators can implement the strategies required to make this argument valid. As Shiller (2003) observed, the only way to profit from an observed bubble is to sell assets short, and there are numerous institutional and psychological barriers to such a strategy. During the Internet bubble of the late 1990s, sophisticated investors such as George Soros incurred heavy losses by short selling indexes such as the NASDAQ as the index value rose from 2000 in 1998 to its peak of

5000 in early 2000. Nevertheless, the decline of the index after 2001 validated the judgments of the short sellers.

### *New Keynesian Models*

“New Keynesian” macroeconomics takes the new classical model as its starting point and seeks to modify it in ways that give rise to phenomena such as involuntary unemployment and asset prices bubbles. The most common approach is to show that plausible kinds of microeconomic market failure can lead to disequilibrium macroeconomic outcomes.

An example of this kind of market failure is when lenders have only imperfect information about the quality of borrowers or about the quality of their investment plans. New Keynesian theory has been concerned to show that such market failures can arise even when market participants are perfectly rational or nearly so. The literature on rational bubbles is a noteworthy example.

### *Behavioral Finance*

A more radical departure from the new classical approach is that of the “behavioral finance” school, which takes as its starting point the existence of a wide range of evidence that neither individual behavior nor the movements of asset prices are consistent with the assumptions and predictions of the efficient markets hypothesis (Kahneman, Knetsch, and Thaler 1990). The primary focus of behavioral finance analysis has been empirical and microeconomic. At least until recently, relatively little attention has been paid to the implications of behavioral anomalies for macroeconomic policy or for the stability of financial systems.

### *Institutionalist and Post Keynesian Critiques*

The neoclassical viewpoints considered above take as a starting point the idea that stocks have a fundamental value, given by the expected present value of future earnings, which may or may not be approximated by the actual market price. Thorstein Veblen, who developed a concept of “putative value” but argued that actual prices would be determined more by “folk psychology” (Raines and Leathers 1996), can be seen as a precursor of the behavioral finance view.

A more fundamental critique was offered by J. M. Keynes (1921, 1936), who argued that economic events more than a few years in the future are subject to such uncertainty as to make probabilistic reasoning (such as the calculation of expectations) inapplicable. It followed that the values imputed to capital assets were, to a large extent, conventional. This idea has been a central theme of Post Keynesian economics and is the basis of the critique of the efficient markets hypothesis presented by Murray Glickman (1994).

*Alternatives—Minsky and Kindelberger*

In formulating a more satisfactory theoretical account, it may be useful to consider the work of Hyman Minsky (1982, 1986). Minsky focused on the instability of credit and investment processes in a market economy and argued that capitalist financial systems are inherently unstable because large swings in investor expectations tend to occur over the course of the economic cycle. In emphasizing the instability of the credit system it is an approach which can be traced back to earlier work by J. S. Mill, Alfred Marshall, and Irving Fisher. Charles Kindleberger (2000) used Minsky's model as the basis for his study *Manias, Panics, and Crashes*, declaring that "the model lends itself effectively to the interpretation of economic and financial history" (14).

Minsky (1982) argued that in a trough, expectations are subdued. As the recovery gathers pace, profits rise and balance sheets are restored. Caution remains for a period, reflecting memories of the previous downturn. As the economy continues to grow, perhaps spurred further by technological breakthroughs or unexpectedly high rates of growth, profits are rebuilt and expectations of future growth begin to rise. Caution begins to recede. Increasingly, animal spirits are stirred and banks begin lending more freely and credit expands. Even cautious investors are encouraged to join the upward surge for fear of forfeiting profit opportunities. Momentum builds behind what Minsky referred to as the "euphoric economy." This attracts highly leveraged asset speculators—Minsky called them "Ponzi financiers"—who rely on rising asset prices to service debt and who drive the market further upward. Increasingly, the market is dominated by speculation about sentiments and movements in the market rather than about fundamental asset values.

At some point in this cycle the financial system becomes increasingly fragile as concerns grow about how long the boom can be sustained. Bad news can quickly frighten investors and speculators and the herd may quickly change direction as panic sets in. The subsequent bust phase may be prolonged if the economy enters a severe debt deflation. Low inflation may actually help foster a debt deflation because outstanding debts cannot be reduced over time through inflation. Finally, the subsequent recovery is accompanied by a rebuilding of balance sheets and other forms of financial cleansing, a process of "creative destruction" that helps renew the system and sow the seeds of a subsequent cycle.

One obstacle to acceptance of Minsky's work has been the lack of microeconomic foundations, that is, of a rigorous formal account of individual behavior and the markets in which individuals interact. The idea that such an account is a necessary prerequisite for a coherent macroeconomic theory became popular in the 1970s and reached its high point with new classical macroeconomics in the early 1980s. Since then, however, emphasis on microeconomic foundations has declined for several reasons. First, users of new classical models have found it necessary to make ad hoc adjustments to microeconomic assumptions in order to improve the capacity of their models to match the "stylized facts" about the macroeconomy that they seek to capture. Second, it has been

shown that, in important instances, modest deviations from standard neoclassical microeconomic assumptions (rational optimization in competitive markets) can produce large changes in macroeconomic outcomes. Third, evidence arising from fields such as generalized expected utility theory and behavioral finance has cast doubt on the empirical validity of the standard assumptions of neoclassical microeconomics.

As improved models of individual behavior are developed, it seems likely that microeconomic foundations for models similar to Minsky's will emerge. Such foundations will take account of the fundamental role of uncertainty, emphasized by writers as diverse as Keynes, Frank Knight, and Minsky. For the moment, it is sufficient to observe that none of the competing models of asset markets combine rigorous microeconomic foundations with empirically realistic predictions about market behavior.

### *Summary*

Satisfactory modeling of asset price bubbles may require a mixture of behavioral finance and new Keynesian insights. The behavioral finance literature shows that deviations from perfect rationality are to be expected. New Keynesian models show that, far from being corrected by market forces and rational expectations, minor deviations from perfect rationality may be amplified into substantial failures of the efficient markets hypothesis, such as asset price bubbles.

Although there is a reasonable theoretical basis for the claim that asset price bubbles may emerge as a result of relatively modest deviations from the joint hypotheses of market efficiency and investor rationality, this does not amount to a theory of bubbles. It is not clear, for example, whether bubbles are isolated and extreme events, in which self-fulfilling speculative prophecies take over from normal processes of market valuation, or whether they are merely extreme instances of the asset price volatility associated with liberalized financial markets. Since there is strong evidence of "excess" volatility even in the absence of bubbles, it is arguable that a bubble is simply the result of a random sequence of upward movements in prices relative to underlying fundamental values.

The principle of Occam's Razor (do not multiply entities unnecessarily) would favor the view that bubbles are simply the right-hand tail of a price distribution characterized by excess volatility. On the other hand, there is good, if not very formal, evidence for the proposition that bubbles are special events characterized by widespread speculative mania. A typical example was the rise of networks such as CNNfN, focusing on equity investment, during the U.S. stock market bubble of the 1990s. Similarly, during the boom in housing prices in Australia since the late 1990s, television shows about real estate speculation have enjoyed exceptional popularity.

### ***The Policy Debate***

The liberalized financial system in which the current debate is framed evolved over two decades following the collapse, in the early 1970s, of the tight system of controls, sometimes referred to as “financial repression,” introduced in the aftermath of World War II. Domestic financial repression was the natural counterpart to the Bretton Woods system of fixed exchange rates and controls on international capital movements, which broke down in 1971.

A reconsideration of the breakdown of the Bretton Woods system in the light of more recent experience suggests that the primary problem was poor macroeconomic policy, based on the mistaken belief that there existed a stable, and exploitable, trade-off between unemployment and inflation, represented by the Phillips curve. It is not necessary to go to the opposite extreme and accept a “natural rate” model to recognize that this belief was incorrect. The immediate cause of the breakdown of Bretton Woods was the unsustainability of a central element of the system, the fixed price of gold, in the face of persistent and accelerating inflation. However, the failure of the system and of attempts to patch it up in the early 1970s led to the acceptance of a more general view that attempts to control international capital flows, and financial markets more generally, were doomed to failure. This view was initially accompanied by a belief that, in a floating exchange rate regime, inflation could be brought under control by monetarist policies based on controlling the rate of growth of money supply. Attempts to manage the economy through control of the money supply were abandoned by the early 1980s, but there was no consideration of a return to regulation—rather the deregulation of financial markets was seen as necessitating more comprehensive microeconomic deregulation.

In the deregulated framework, as it was consolidated in the 1990s, central banks used interest rates to target stable rates of inflation and (directly or indirectly) stable rates of output growth. Prudential regulators sought to protect bank depositors and other consumers of financial services from unsound behavior, such as the maintenance of inadequate reserves, by individual financial institutions.

Although asset prices have fluctuated widely since the financial liberalization of the 1970s, there has, until recently, been little support for intervention to stabilize asset prices, with the partial exception of exchange rates. There were some attempts to manage exchange rates on a co-operative basis in the 1980s, notably the Plaza Accord of 1985 which induced a 30 percent depreciation of the U.S. dollar and helped to constrain the growth of the current account deficit in the United States. European concerns with the destabilizing effects of exchange rate fluctuations were reflected in the adoption of the European Monetary System in 1979 and, ultimately, in the move to a single currency, the euro, in 1999.

In countries that have retained a floating exchange rate, there has been a general increase in willingness to intervene in markets, with or without overt announcement of the fact. Examples include the “strong dollar” policy adopted by the United States

under the Clinton administration and the exchange rate smoothing policies of the Reserve Bank of Australia (Kim and Sheen 1999). The short-lived Canadian and New Zealand experiments with the use of a Monetary Conditions Index also implied an automatic countervailing response to exchange rate movements, though the rationale was rather different.

At least until the mid 1990s, however, the dominant trend was toward liberalization of asset markets of all kinds. This trend was embodied in the Washington Consensus, in which liberalized financial markets were seen as having a powerful and beneficent role in constraining the excesses of governments. Coined by John Williamson (1990) to describe the set of economic assumptions and policy prescriptions favored by major Washington-based institutions including the International Money Fund, the World Bank, and the United States Treasury, this term subsequently took on a life of its own, being extended to cover a range of free market policies which Williamson himself did not advocate and, in some cases, actively opposed.

The rise of the Washington Consensus reflected the experience of the stabilization policies adopted in response to the international debt crisis of the 1980s, where attempts by debtor governments to deal with the crisis through policies of financial repression and import substitution were almost invariably unsuccessful. In the judgment of the main Washington institutions dealing with the crisis (the IMF, the World Bank and the U.S. Treasury), countries that “took their medicine” and liberalized capital markets were more successful.

In the 1990s, however, a series of countries with recently liberalized financial markets (Mexico, Russia, Argentina) experienced financial crises, most of which could be analyzed in terms of capital market volatility. The greatest such event was the Asian crisis of 1997–98, which affected most of the economies of East and Southeast Asia. The Japanese bubble and bust of the 1980s and 1990s, previously seen as an isolated instance reflecting the exceptional nature of the Japanese economy, came increasingly to be seen as an archetypal example of an asset price boom and slump. As in the Japanese case, the typical pattern of asset price volatility involves upswings in asset prices leading to bubble-type over-valuation, followed by subsequent sharp corrections and associated financial stress or collapse. Thus far, Japan is the only developed country to have experienced a full-scale debt deflation in the period of liberalizations. However, there is increasing concern over parallels between the situation in the United States in the late 1920s and in the aftermath of the 1990s bubble. Both cases were marked by large equity asset bubbles which subsequently burst, although prospects for the U.S. economy remain unclear in the wake of the bubble of the late 1990s.

In this context, the policies of the U.S. Federal Reserve and particularly its chairman Alan Greenspan have come under increasing criticism. The central point of criticism is that, having warned of “irrational exuberance” in 1996, Greenspan should have sought to constrain the growth in equity prices, through tighter monetary policy or, at a minimum, through continued warnings regarding the unsustainability of the boom. Instead, in the eyes of critics, Greenspan effectively recanted his 1996 skepticism and

become an influential advocate of the “new economy” thesis underlying the boom, namely, that rising asset prices could be sustained by unprecedented rates of productivity growth generated by communications and information technology.

Greenspan has been criticized for bailing out the failed hedge fund Long Term Capital Investment in 1998 and for subsequently giving the market the green light by lowering interest rates and talking up the “new economy.” The general reluctance of central banks to restrain asset inflation has created the impression that they will tacitly support a boom and try to mop up any subsequent bust, thus creating problems of moral hazard. This belief was referred to in the late 1990s as the “Greenspan put.”

### ***Policy Responses to Asset Price Inflation***

Discussion of policy responses to the problems of asset price inflation has focused on methods of preventing or controlling asset price booms. Most attention has been paid to the role of monetary policy (that is, in the current policy regime, interest rate policy).

The first problem is that of identifying a bubble. As Greenspan (1999) observed:

If we could find a way to prevent or deflate emerging bubbles we would be better off. Identifying a bubble in the process of inflation may be among the most formidable challenges confronting a central bank.

The task seems difficult but not hopeless. The existence of a bubble in Japanese land prices in the 1980s and U.S. equity markets in the 1990s was fairly widely recognized, as is the current bubble in real estate in Australia and elsewhere. After studying experiences in thirty-four countries since the 1960s, Borio and Lowe (2002) concluded that a combination of rapidly growing debt and asset prices provides a reasonable guide to troubles ahead. They suggested (22) a “slightly modified policy regime, under which the central bank responds not only to short-term inflation pressures but also, at least occasionally, to financial imbalances.” Under such a regime, they argued, “the central bank might opt for higher interest rates than are justified on the basis of the short-term inflation outlook.”

If an asset bubble is identified in the process of inflation, what can be done about it? One strand of the debate concerns the idea that the dominant approach to monetary policy, based on targeting rates of inflation, should be modified to take account of asset prices. Such a modification may be justified either by arguments that inflation in asset prices is an inherently welfare-relevant component of inflation, or because inflation in asset prices is a precursor of inflation in the prices of goods and services. In monetary regimes that explicitly target economic activity (as in the United States or Australia), a further rationale is that asset inflation may have medium-term consequences for economic activity. Charles Bean (2003, 2) argued that a forward-looking, flexible inflation

targeting central bank “should bear in mind those longer term consequences of asset price bubbles and financial imbalances in the setting of current interest rates.”

The idea that price indexes should incorporate asset prices was first put forward by Armen Alchian and Benjamin Klein (1973) and revived, in the context of the asset price bubble debate, by Goodhart (1999, 2001). Alchian and Klein argued, in the context of a life-cycle consumption model, that the appropriate price index for welfare purposes is a lifetime cost of living and that prices of assets such as houses represent the cost of a flow of housing services that house owners will receive over the period during which they own the house. This view has received relatively little support, primarily because the price of assets is determined by a range of factors, including risk attitudes and expectations of future productivity (Filardo 2000).

Central bankers and monetary economists have been more sympathetic to the idea of taking some account of asset prices if these are seen as likely to boost spending and hence spill over into general inflation (Bernanke and Gertler 1999; Stevens 2003). However, the relevant dynamics are difficult to fathom and raise the levels of uncertainty surrounding policy calculations to daunting levels; a problem which is compounded in any framework that involves increasing the timeframe of an inflation-targeting regime because of the inevitable and rapidly increasing uncertainty involved in longer-term forecasting. These problems, combined with the lags associated with monetary tightening, raise daunting issues for monetary authorities. As the Reserve Bank of Australia (2003a, 53) commented, “The challenge in this regard is that the risks engendered by developments in asset markets are most often low-probability, medium-horizon events that do not lend themselves to easy inclusion in standard short-term forecasts.” Attempting to control asset inflation using short-term interest rates also implies greater interest rate variability and this, as L. Randall Wray (2003, 106) pointed out, is likely to increase uncertainty and hence encourage higher levels of speculative behavior.

Another criticism of using monetary policy to fight asset inflation has been the standard argument that a policy with a single instrument, in this case short-term interest rates, should be directed toward a single target, most commonly inflation as measured by the Consumer Price Index (CPI). Ideally a second instrument, such as fiscal policy, would be used to stabilize aggregate output. In the absence of effective fiscal policy, the target-instrument framework leads to the adoption of approaches such as the Taylor rule, where the aim is to minimize a weighted sum of deviations from target rates of inflation and output growth. In this analytical framework, the introduction of additional targets is likely to lead to a blurring of the policy focus. Indeed, it was this problem that the inflation-targeting regimes of the 1990s were partly designed to overcome. In the absence of clear evidence that asset price inflation leads to future CPI inflation, tinkering with the CPI measure of inflation raises the danger of adopting a multi-objective policy without explicit acknowledgement of the fact.

A further criticism focuses on the weaknesses of interest rate policy as an instrument for moderating asset price inflation. Greenspan (2002) argued that interest rate

policy is a blunt instrument and that the link between interest rates and asset prices is uncertain. Raising interest rates amid the euphoria of a boom may have little effect. Greenspan cited the series of U.S. rate rises of 1989, 1994, and 1999, all of which did nothing to stem the market. A small rate rise might even backfire if it worked simply to reassure investors about the inflation outlook and hence spur greater optimism about the future. A large increase might work, but an increase big enough to pop an exuberant bubble could have a major negative impact on the wider economy. Greenspan was emphatic:

It seems reasonable to generalize from our recent experience that no low-risk, low cost, incremental policy tightening exists that can reliably deflate a bubble. But is there policy that can limit the size of a bubble and, hence, its destructive fall out? From the evidence to date, the answer appears to be no.

Dealing with asset inflation also raises an important political problem for central banks. Credit availability and asset booms are popular and provide a sense of opportunity and economic well-being. In these circumstances any policy intervention that produces a slowdown in activity is likely to be unpopular. In the event that a misjudged policy response produced a recession, the political consequences are likely to be more severe than in the converse case of allowing a boom to run on excessively.

It is noteworthy, however, that Greenspan's (2002) statement, focusing on interest rate policy, omits discussion of more direct intervention, such as higher margin requirements. In 1996, he had stated at a Federal Reserve meeting, "I guarantee that if you want to get rid of the bubble . . . this [higher margin requirements] will do it" (Federal Reserve Board 1996). This undermines the key argument of Greenspan 2002 and suggests that unwillingness to use direct policy instruments to constrain bubbles is a key source of the difficulty of the problem.

The problems seem particularly severe with respect to the use of higher interest rates, which are always politically unpopular, as an instrument to constrain increases in asset prices, which are generally popular. Also, the central bank may be unable to convincingly demonstrate, even *ex post*, that a policy tightening was necessary. As Borio and Lowe (2002) commented, "It takes a brave central bank to raise interest rates in the absence of obvious inflationary pressures." Central bankers have worked hard in the last two decades in the fight against inflation to win some measure of institutional legitimacy and are worried about jeopardizing it now.

The discussions at a recent Reserve Bank of Australia conference (2003b) provide a good summary of the current state of the debate. Most participants agreed in principle with the desirability of managing bubbles if possible but were doubtful that there was sufficient information on which to formulate policy in most cases. The general consensus was close to the position put earlier by Deputy RBA Governor Glenn Stevens (2003, 26):

We don't know enough about the behavior of asset prices, much less about their linkages to the economy through the financial sector, to make forecasts with any confidence. Nor do we know much about how the dynamics might respond to monetary policy. . . .

A case *might* be made on rare occasions, to adopt a policy of "least regret" so far as asset prices are concerned, if financial and macroeconomic stability were thought to be at risk. To do so would probably require an acceptance of a longer time horizon for inflation targets, and an acceptance of a bit more short-term deviation from the central point of the target. (Original emphasis)

Pointedly, however, Stevens added that "these issues remain unresolved among theorists and practitioners of monetary policy." Nevertheless, there is some empirical evidence that several major central banks have reacted to asset price (and exchange rate) disequilibria (Chadha et al. 2004), while Stephen Bell (2004) argued that the rate increases used by the Reserve Bank of Australia in late 2003 were partly aimed at inflated credit and housing markets. It is notable, however, that the central banks in question deny that they are using interest rates for such purposes.

This inconclusiveness, even obfuscation, reflects the air of artificiality about the entire debate. Concerns about the dangers of asset price booms and debt deflation are complex and wide ranging, and cannot easily be fitted into an analytical framework based on a single variable, such as a measure of inflation, or a policy framework that is implicitly based on the efficient markets hypothesis or at least on the view that the task of allocating financial assets is best handled by markets.

### *Prudential Policy*

At first sight the use of prudential policy to control asset price bubbles, leaving monetary policy focused on traditional inflation targets, seems to have considerable promise. As Borio and Lowe (2002) noted, this allocation of responsibility seems to meet the Tinbergen criterion of assigning one instrument for each target.

This is, however, a misperception. In the policy framework arising from financial liberalization, the justification for prudential regulation is based on the principal-agent problem that emerges when financial institutions manage the assets of depositors, or other customers, who are not in a position to closely monitor the activities of those institutions.

That is, prudential policy is oriented toward ensuring that individual financial institutions act honestly and manage risk appropriately. The typical instruments used in prudential regulation involve capital adequacy ratios and other measures of the riskiness of an institution's portfolio. These measures depend, almost inevitably, on market asset values. Thus, prudential regulation, properly applied, can ensure that institutions do not respond inappropriately to market signals but cannot deal adequately with the problems that arise when market prices are themselves distorted by bubbles or busts.

The closest approach to the problem is to examine the vulnerability of institutions to particular changes in asset prices. The Australian Prudential Regulatory Authority has recently undertaken such an examination of Australian providers of finance for housing.

This point is put most clearly by Carmichael and Esho (2001). Responding to the suggestion of Anna Schwartz (2002) that prudential authorities should link portfolio composition to capital requirements or deposit premiums, thereby penalizing banks that lend on assets where prices are subject to bubbles, they argued that the proposed policy—

requires regulators to form judgements about the optimal structure of the real sector—an area in which their expertise would have to be questioned. Second, it involves substituting the judgement of regulators for the judgement of bank management—something that runs counter to the risk-based philosophy that has been emerging in banking regulation in recent decades. . . .

While we accept that shifts in portfolio composition can play an important role in facilitating the development of asset price bubbles, introducing a system of benchmark portfolio weights and penalising deviations from those benchmarks would be an extremely costly and inefficient way of dealing with the problem. *It would also be a retrograde step in the evolution of regulatory philosophy away from directives that substitute the commercial judgements of regulators for those of bank management.* (16; emphasis added)

Implicitly, the modern framework of monetary policy relies on a threefold division of responsibility. Central banks, using short-term interest rates as their primary instrument, are responsible for stabilizing the inflation rate at a low target level. Prudential regulators are responsible for ensuring that individual financial institutions maintain an appropriate balance of risk and reserves. The task of determining asset prices, or, equivalently, the volume and allocation of aggregate investment, is left to capital markets.

### ***An Alternative Analysis***

As the discussion above indicates, the current policy debate on asset price bubbles has reached an unsatisfactory point. On one hand, it is generally agreed that asset price bubbles occur regularly and that the bursting of such bubbles often has significant negative consequences for the financial system, the macroeconomy, and individual investors. On the other hand, there are powerful objections to any plausible policy response that might be considered within the current policy framework.

When this kind of policy dilemma emerges, it often reflects the existence of inherent contradictions between the facts under consideration and the premises on which institutional frameworks are founded. In the present case, it is not difficult to find such

a contradiction. As the discussion of Carmichael and Esho (2001) indicates, the current framework for monetary policy is based on the efficient markets hypothesis or at least on the view that the task of allocating financial assets is better handled by markets than by regulators.

On the other hand, the central fact giving rise to the debate about asset prices and bubbles is that the volatility of asset prices has increased in the period of financial liberalization. In the light of the experience of the 1990s, and particularly the speculative bubble that dominated the world's most well-developed and sophisticated capital markets, few economists now explicitly endorse the strongest forms of the efficient markets hypothesis, in which markets always and everywhere make the best possible use of all available information. Even prominent defenders of the hypothesis such as Malkiel (2003) now allow for occasional episodes of speculative mania such as the "dotcom" bubble.

To the extent that the efficient markets hypothesis is violated, asset prices generated by capital markets will deviate from the "fundamental" values, that is, the optimal estimates of value based on all available information. In a policy framework where responsibility for asset price determination is left to markets, excessive asset price volatility is inevitable as is the occurrence of asset price bubbles.

With the arguable exception of "jawboning," no policy response aimed at controlling asset price bubbles is consistent with the current policy framework. It is necessary either to accept asset price volatility, including the occurrence of asset price bubbles, as part of the price of liberalization or to reconsider the entire policy framework. As argued here, any "half way house" of attempting to use either monetary or prudential policy to regulate the system at the margins confronts severe difficulties.

### *Financial Repression?*

Asset price bubbles are an inevitable consequence of financial liberalization. In general, as has been discussed above, there is no satisfactory way of identifying and controlling bubbles in the process of formation. Hence, to the extent that bubbles are regarded as economically damaging, it is necessary to consider changes in the structure of financial regulation that will reduce their frequency and severity.

If light-handed regulatory structures facilitate the formation of bubbles, it seems likely that some measures of financial repression will be needed if the frequency and severity of bubbles is to be reduced. To the extent that this represents a reversal of the policy developments of the 1980s and 1990s, a return to more detailed and intrusive regulation would indeed be a significant step.

Two elements stand out as potential responses to an asset price boom. The first is a response to the observation that strong increases in asset prices are typically associated with financial innovations. For example, the boom in "dotcom" shares was facilitated by the innovative use of stock options as a method of payment for executives and others. Genuinely beneficial financial innovations may justify some increase in the values of

assets by facilitating trade in those assets. However, there are also many examples, dating back to the South Sea Bubble, of spurious financial innovations being used to justify speculative booms. During the postwar era, the structure of regulation specified required holdings of particular financial assets for banks and other financial institutions. Hence, there was a presumption against financial innovation. Most financial innovation took place on the margin, either in unregulated financial institutions or by the exploitation of gaps in existing regulations. Over time, regulations were adjusted to accommodate successful innovations, for example, by broadening the range of assets that could be counted for particular purposes.

By contrast, in the era of deregulation, there is a presumption in favor of financial innovation. In general, no process of regulatory approval is required before a new financial instrument is adopted. Even where rules are applied, as in the case of accounting standards, there is a general presumption in favor of "creative" interpretations that permit innovations in financing. In response to such failures as the rise and fall of Enron, there has been some tightening of accounting and regulatory standards. Thus far, however, there has been no fundamental change in prudential policy. In the absence of a severe failure in the financial system of the United States, it seems unlikely that ideas of a "new global financial architecture" will ever be much more than ideas.

In addition to restrictions on financial innovation, the central element of the postwar policy of financial repression was that of "qualitative control," that is, directions to financial institutions to reduce lending to sectors seen as "overheated" while maintaining or increasing lending in other areas. Reliance on qualitative controls was a natural accompaniment to a policy of fixing interest rates directly, rather than through open market operations or management of a particular short-term interest rate such as the Federal Funds rate. Qualitative controls implicitly set different interest rate "prices" for different kinds of investment. The proposals of Schwartz (2002) represent one way in which differential prices could be introduced into the current policy framework based on separation of monetary and prudential policy. One way to proceed would be to define more precisely the system of deposit protection provided by government. Financial institutions that chose to operate within this system (most presumably) would, as a *quid pro quo*, be required to submit to qualitative controls regarding the composition of their loan portfolios, with a view to reducing credit flows to "overheated" sectors.

### ***Concluding Comments***

Asset price volatility is an inevitable consequence of financial market liberalization and, in extreme cases, generates asset price bubbles, the bursting of which can impose substantial economic and social costs. Policy responses within the existing liberalized financial system face daunting levels of uncertainty and risk. Borio and Lowe's (2002) efforts to develop lead indicators of financial instability are commendable but do not and probably cannot go far enough in reducing the uncertainty confronting policy mak-

ers. The calibration of instruments, such as interest rates, in dealing with overheated asset markets is also highly uncertain. Both sets of problems constrain the options open to policy makers and highlight the economic and political risks associated with policy adventurism or, worse still, policy errors. Hence, the catchwords of even those who advocate monetary policy responses to asset price inflation are “judgment” and “caution.” This suggests that policy makers will remain nervously on the sidelines of financial market gyrations or at most make small, tentative moves with interest rates in attempts to constrain markets, using a modified inflation-targeting framework as their rationale. This has been the stance of recent monetary policy moves in Australia in the face of house price overheating (Bell 2004). This is a “subtle” shift in policy, but as Greenspan pointed out above, there are few reasons so far to believe that such shifts will do much to contain major bouts of asset inflation.

Given the pattern of increasing asset market volatility over recent decades and the policy issues highlighted in this paper, the future looks uncertain. Another significant cycle of asset price movements, especially in one of the major economies, could see a fundamental revision of thinking about the costs and benefits of liberalized financial systems. Arguably, the only alternative is a return to some degree of financial repression. As the governor of the Reserve Bank of Australia, Ian Macfarlane (personal communication, November 2001) observed,

I think the really fundamental answer is, if they can't sort them [financial crises] out, then the only ultimate answer is some form of re-regulation. I'm not for a minute thinking it's going to happen in the next decade. But I would not rule out the possibility that in twenty-five years, if we had a lot of bad experiences, and we go through another cycle, we might seek some very clearly thought out regulations.

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