

## **Bubble Poppers:** Monetary Policy and the Myth of 'Bubbles' in Asset Prices

Dr Stephen Kirchner

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However one twists things, one will never succeed in formulating the notion of ‘irrational’ action whose ‘irrationality’ is not founded upon an arbitrary judgment of value.

—*Ludwig von Mises*<sup>1</sup>

## Introduction

Since the boom and bust in technology stock prices around the turn of the century, there has been growing debate about the role of asset prices in the conduct of monetary policy. This debate has become even more salient in the wake of the recent boom and bust in the US housing market and subsequent global financial crisis. The consensus among policymakers has been that while monetary policy should take account of the implications of developments in asset prices for the broader economy, monetary policy should not seek to actively manage or explicitly target asset prices as such. Former US Federal Reserve Chairman Alan Greenspan was particularly prominent in defending this view, a position widely held within the central banking community, at least until recently.

There has nonetheless been a dissenting view among some policymakers, academics and commentators that monetary policy should aim to prevent pronounced asset price cycles as part of a broader mandate to promote financial and macroeconomic stability. While there is little support for targeting specific values or growth rates for asset prices, there is growing support for the idea that monetary policy should lean more heavily against incipient asset price inflation, rather than merely responding to the macroeconomic consequences of asset price busts. There are now indications of a shift in sentiment at the Federal Reserve (the Fed), the Reserve Bank of Australia (RBA), and other central banks in favour of a more activist role for monetary policy in relation to asset prices.

This monograph argues that monetary policy should not aim to actively manage asset price cycles. It begins by considering the consensus view of the relationship between monetary policy and asset prices and the evolving challenge to this view in light of the recent global financial crisis.

The idea of ‘bubbles’ in asset prices is then considered. It is argued that a ‘bubble’ is not a meaningful way to characterise asset price cycles because the concept lacks both analytical coherence and empirical support. Some of the most well-known historical ‘bubble’ episodes, such as the Dutch ‘tulipmania’ of the 1630s, are shown to be myths that have been largely debunked by modern scholarship. The inability of economists to give substance to the idea of ‘bubbles’ argues against using monetary policy to manage asset price cycles.

The monograph reviews two recent ‘bubble’ episodes: the turn of the century boom and bust in technology stocks; and the more recent US housing cycle. It questions whether either episode can be meaningfully characterised as a ‘bubble’ and argues that monetary policy played only a minor role in both episodes.

The monograph considers some of the practical problems that are likely to be encountered in implementing an activist approach to asset prices. These difficulties help explain why historical attempts to prick asset price ‘bubbles’ have often ended in disaster. Fixed or managed exchange rate regimes represent the most direct attempt by central banks to manage asset prices and have been a notable failure historically.

Asset price booms and busts have been experienced in the context of a broad-range of monetary policy regimes and in both high and low inflation environments. This suggests that there is not a straightforward relationship between monetary policy and asset prices that can be relied upon for policy purposes. Asset price booms and busts are more likely to emerge when monetary policy departs from established benchmarks focused on the stability of consumer prices, implying that monetary policy should be more rule-bound rather than more activist or discretionary.

**This monograph argues that monetary policy should not aim to actively manage asset price cycles.**

Asset price cycles are a normal part of the functioning of financial markets and may have significant economic benefits. These cycles are generally only harmful when associated with poorly regulated financial systems and government incentives to risk taking. Policymakers need to focus on better prudential regulations rather than monetary policy as the best defence against potentially adverse interactions between asset price cycles, the financial system, and the broader economy. The paper concludes by suggesting that the growing debate over the relationship between monetary policy and asset prices has parallels with the ‘socialist calculation debate’ of the 1920s.

### Monetary policy and asset prices: The consensus view

The theory and practice of monetary policy in the world’s developed economies since the early 1990s has converged around a set of broad principles. Price stability has become the main focus of monetary policy, with most central banks adopting more or less formal inflation targets specifying a goal for some measure of consumer price inflation over time.<sup>2</sup> While some central banks such as the Fed and the RBA have notionally retained other statutory policy objectives, these objectives have in practice been subordinated to the pursuit of price stability.

To facilitate this focus on price stability, central banks have been made increasingly independent of government, while also being subject to stricter accountability and transparency regimes. Monetary policy has also been separated from other traditional central bank functions, such as financial sector supervision, to ensure a singular focus on price stability. The choice of the inflation rate as the target for monetary policy reflects the unsatisfactory historical experience with the pursuit of multiple policy objectives by central banks. This was often associated with poor economic performance, including high and variable rates of inflation, as well as a lack of transparency and accountability in the conduct of monetary policy.

**Within this inflation targeting framework, asset prices play the role of information variables rather than targets for policy.**

Central banks have also come to use an official interest rate as their main policy instrument. This has increased the transparency of central bank operations and aligns the singular focus on price stability with a single policy instrument. Monetary policy can be assessed in terms of how the official interest rate responds to macroeconomic variables. If monetary policy responds to these variables in a systematic way, it becomes possible to identify a policy rule, for example, the Taylor rule,<sup>3</sup> which can then be used to benchmark the stance of monetary policy. The empirical literature on monetary policy rules suggests that the behaviour of official interest rates has become more predictable in

recent decades and dominated by central banks’ response to inflation.<sup>4</sup> Official interest rates also respond to the level of economic activity because economic activity helps forecast future inflation. Attempts at including other variables such as asset prices in these policy rules have produced mixed results. This does not mean that monetary policy ignores other variables, but the response to these variables is effectively captured by the response to consumer price inflation and economic activity. Since asset prices are poor predictors of future consumer price inflation, monetary policy does not typically respond to asset prices in a systematic way.

An important implication of these developments in the theory and practice of monetary policy is that it has become increasingly endogenous to economic activity: in other words, it is the economy that drives monetary policy, not the other way around. The literature on policy rules confirms that the conduct of monetary policy in recent decades has become less discretionary and therefore more predictable. With inflation expectations well anchored by an inflation target, the need for activist monetary policy is greatly reduced. Deviations in the official interest rate from the Taylor rule are usually small. Large deviations can help identify episodes of greater monetary policy discretion when policy may have been too easy or too tight relative to prevailing economic conditions.

Within this inflation targeting framework, asset prices play the role of information variables rather than targets for policy. In setting official interest rates, central banks consider a broad range of macroeconomic and other indicators to gauge the strength of economic activity and future inflation pressures. The prices for assets such as equities and real estate may contain information



about the current and future state of the economy. Asset prices are sometimes incorporated into the macroeconomic models that central banks use for forecasting the economy and inflation. The adoption of an inflation target as the final objective of policy does not preclude taking account of a wide range of variables in monetary policy decision making. As Ben Bernanke and his co-authors noted in their 1999 book on the subject, ‘inflation targeting is very much a “look at everything” strategy, albeit with a focused goal.’<sup>5</sup> However, it is noteworthy that this volume, which pre-dated the technology stock price bust in 2000, contained almost no discussion of the role of asset prices in monetary policy. ‘Bubble’ and ‘asset prices’ do not even feature in the index.

In contrast to the ‘Great Inflation’ of the 1970s, the period following the US disinflation of the early 1980s, continuing into the 1990s and the first part of this decade, was characterised by a reduction in the volatility of key macroeconomic variables around the world. This period became known as the ‘Great Moderation,’ although it remains to be seen whether this shift to a lower volatility macroeconomic environment survives in the wake of the recent global financial crisis. The consensus view maintains that an inflation targeting framework not only promotes macroeconomic stability, but also that ‘a monetary regime that produces aggregate price stability will, as a by-product, tend to promote stability of the financial system.’<sup>6</sup>

**It remains to be seen whether this shift to a lower volatility macroeconomic environment survives in the wake of the recent global financial crisis.**

### **Consensus under challenge: The evolving debate on the role of asset prices in monetary policy**

In December 1996, Greenspan famously asked ‘how do we know when irrational exuberance has unduly escalated asset values...? And how do we factor that assessment into monetary policy?’ Greenspan suggested the following answer to his own question:

We as central bankers need not be concerned if a collapsing financial asset bubble does not threaten to impair the real economy, its production, jobs, and price stability. Indeed, the sharp stock market break of 1987 had few negative consequences for the economy. But we should not underestimate or become complacent about the complexity of the interactions of asset markets and the economy. Thus, evaluating shifts in balance sheets generally, and in asset prices particularly, must be an integral part of the development of monetary policy.<sup>7</sup>

Greenspan’s 1996 ‘irrational exuberance’ speech reflected the consensus view of the relationship between monetary policy and asset prices that informed the decision-making of the US Federal Open Market Committee (FOMC), the body that sets US interest rates. In testimony before the US Congress in 1999, Greenspan also articulated what came to be known as the ‘asymmetric’ view of the relationship between monetary policy and asset price cycles:

[T]he central bank cannot effectively directly target stock or other asset prices. Should an asset bubble arise, or even if one is already in train, monetary policy properly calibrated can doubtless mitigate at least part of the impact on the economy. And, obviously, if we could find a way to prevent or deflate emerging bubbles, we would be better off. But identifying a bubble in the process of inflating may be among the most formidable challenges confronting a central bank, pitting its own assessment of fundamentals against the combined judgment of millions of investors ... It is the job of economic policymakers to mitigate the fallout when it occurs and, hopefully, ease the transition to the next expansion.<sup>8</sup>

The boom and bust in technology stock prices around the turn of the century and the subsequent US and global recession in 2001 only served to reinforce Greenspan’s view of the dangers of using monetary policy to manage asset prices. Greenspan told the 2002 Jackson Hole symposium of central bankers that:

As events evolved, we recognized that, despite our suspicions, it was very difficult to definitively identify a bubble until after the fact—that is, when its bursting confirmed its existence.

Moreover, it was far from obvious that bubbles, even if identified early, could be preempted short of the central bank inducing a substantial contraction in economic activity—the very outcome we would be seeking to avoid ... nothing short of a sharp increase in short-term rates that engenders a significant economic retrenchment is sufficient to check a nascent bubble. The notion that a well-timed incremental tightening could have been calibrated to prevent the late 1990s bubble is almost surely an illusion.<sup>9</sup>

In 2002, the Fed was less concerned with pre-empting asset price *inflation* than with pre-empting the prospect of consumer price *deflation*. The Fed had closely studied Japan's experience with deflation and the zero bound on nominal interest rates from the mid-1990s onwards. The main lesson the Fed took from the Japanese experience was that monetary policy should respond aggressively to pre-empt the threat of consumer price deflation and the zero bound problem, which occurs when the combination of zero nominal interest rates and deflation drives the real interest rate higher, threatening a deflationary spiral, unless the authorities resort to alternative policy instruments.<sup>10</sup>

**In 2002, the Fed was less concerned with pre-empting asset price inflation than with pre-empting the prospect of consumer price deflation.**

Greenspan's successor, Ben Bernanke, shared this view of the relationship between monetary policy and asset prices, largely reflecting his research into the Great Depression, as well as his classic study with Mark Gertler, showing that including asset prices in a Taylor-type interest rate rule could be destabilising.<sup>11</sup> As a member of the Board of Governors of the Fed, Bernanke argued that:

Even putting aside the great difficulty of identifying bubbles in asset prices, monetary policy cannot be directed finely enough to guide asset prices without risking severe collateral damage to the economy.<sup>12</sup>

Similar views prevailed among European policymakers. European Central Bank President Jean-Claude Trichet observed in 2002 that 'my feeling is that we should be extremely cautious about it, perhaps because it would be like opening Pandora's Box if we started setting our key policy rates according to asset price changes.'<sup>13</sup>

Within the RBA, some economists argued as early as 1997 that 'there may be circumstances where monetary policy should be tightened in order to bring on the collapse of [a] bubble before it becomes too large, even though this means that expected inflation is (temporarily) below target. The reason for doing so is that such a policy can help to avoid extreme longer-term effects of a larger asset price bubble and its eventual collapse.'<sup>14</sup> The relationship between asset prices and monetary policy was the subject of the RBA's 2003 conference proceedings. Then Deputy Governor Glenn Stevens summed-up the attitude of conference participants saying '*perhaps* we should, at some times, be prepared to lean a little into asset price swings, on the grounds of "least regret," but with considerable care'<sup>15</sup> [emphasis in original]. At the same conference, however, a paper by RBA economists Gruen, Stone and Plumb highlighted some of the difficulties in implementing such an approach.<sup>16</sup>

Many commentators have suggested that the RBA successfully leaned against a housing 'bubble' with interest rate increases in 2002 and 2003.<sup>17</sup> While housing featured prominently in the RBA's discussion of the economy at this time, there is little evidence that this rhetoric translated into particularly restrictive policy settings, which remained accommodative well into 2005. The RBA was in fact sending strong signals by mid-2003 that it might abandon its tightening cycle. Former RBA Governor Ian Macfarlane told the House Economics Committee on 6 June 2003 that the policy decision facing the RBA was 'do we stay where we are or will we need to go down and, if the latter, would it have to happen quickly or could it happen in a more measured way? All the central banks around the world are grappling with that issue, and *we are no different to the others in that*

sense'<sup>18</sup> [emphasis added]. The RBA was thus contemplating a new easing cycle in the same month that the Fed was taking its policy rate to its then cyclical low of 1 percent. These comments served to lower expectations for the future course of the real interest rate, a *de facto* easing in monetary policy. The RBA's 2002–03 interest rate hikes are now widely cited as an example of successful 'bubble' popping, but there is little substance behind this view.

In concluding his 2006 Boyer Lectures, Macfarlane said, 'No one though, has a clear mandate at the moment to deal with the threat of major financial instability associated with an asset price boom and bust. Yet I cannot help but feel that the threat from that source is greater than the threat from inflation, deflation, the balance of payments and the other familiar economic variables that we have confronted in the past.'<sup>19</sup> Macfarlane did not suggest what might be done about this danger.

More recently, RBA Governor Glenn Stevens has asked 'whether something can and should be done to dampen the profound cycles in financial behaviour, with associated swings in asset prices and credit, given the damage they can potentially do to an economy.' Stevens noted that 'an effective response against the financial cycles almost certainly involves monetary policy' and that 'I sense now ... that among many thoughtful people this question is once again up for discussion.'<sup>20</sup> The case for targeting asset prices is weaker in a small, open economy like Australia compared to a large, relatively closed economy like the United States. Australia is a price-taker in global capital markets, so domestic monetary policy may not have a strong influence on asset prices that mainly reflect developments in global markets.

In a speech in October 2008, Federal Reserve Chairman Bernanke also seemed to change his tune, arguing that 'the last decade has shown that bursting bubbles can be an extraordinarily dangerous and costly phenomenon for the economy, and there is no doubt that as we emerge from the financial crisis, we will all be looking at that issue and what can be done about it.'<sup>21</sup> Similarly, Federal Reserve Vice Chair Donald Kohn has recently conceded that 'if it becomes clear that monetary policy can predictably influence the evolution of bubbles, central banks should take that ability into account when crafting policies intended to keep output rising in line with its potential and inflation low and stable.'<sup>22</sup>

**RBA Governor Glenn Stevens has asked 'whether something can and should be done to dampen the profound cycles in financial behaviour'.**

Within the Bank for International Settlements (BIS), the central bank of central banks, there has also been growing support for monetary policy to respond to asset prices, a view supported in its 2001 Annual Report.<sup>23</sup> In an influential BIS working paper, Borio and Lowe argued that 'a monetary response to credit and asset markets may be appropriate to preserve both financial and monetary stability.'<sup>24</sup> Invoking a pseudo-Austrian School interpretation of the business cycle, William White of the BIS argued in another widely cited paper that the benefits of price stability have been overestimated and the costs underestimated, and called for a more activist and 'symmetrical' approach to 'financial imbalances.'<sup>25</sup>

Outside central bank and academic circles, there has also been growing popular support for a more activist approach to asset prices, often in conjunction with highly personalised attacks on policymakers, most notably Greenspan. Mark Gertler, for example, has described how '*The Economist* [magazine] attacked us viciously' in response to his previously cited 1999 paper with Bernanke on monetary policy and asset price volatility.<sup>26</sup>

While this support for a more activist approach to asset prices is still very much in the formative stages, some economists have also argued for specific operational approaches to these issues. Economists have long debated whether asset prices should be included in measures of consumer price inflation with a view to stabilising the price of future as well as current consumption.<sup>27</sup> Charles Goodhart, a former member of the Bank of England's Monetary Policy Committee, together with Bundesbank economist Boris Hofmann, has argued that house prices should be included in the measure of consumer price inflation targeted by the central bank.<sup>28</sup> Other authors have suggested that inflation should be measured on a 'cost of life' rather than cost of living basis.<sup>29</sup> However, the relationship between asset prices and future consumption is not nearly as straightforward as the relationship between consumer price inflation and current consumption.

Whereas current inflation forecasts future inflation, it is less clear that asset prices contain reliable information about future inflation. Other economists have argued that asset prices should not feature in the policy rule of the central bank or measures of inflation, but that monetary policy should nonetheless react ‘systematically to asset price misalignments.’<sup>30</sup>

### What is a ‘bubble’ in asset prices?

The case for an activist approach to asset price cycles relies heavily on the notion that asset prices are prone to ‘bubbles’ that may destabilise the financial system and the broader economy. However,

**There is almost no agreement in the literature on what might constitute an asset price ‘bubble.’**

there is almost no agreement in the literature on what might constitute an asset price ‘bubble.’ This fundamental lack of understanding presents considerable problems for any attempt to operationalise an activist approach to asset prices on the part of monetary policy. The literature typically distinguishes between ‘rational’ and ‘irrational’ bubbles, although both these conceptions suffer from similar problems.

#### *Rational bubbles*

Rational bubbles occur in the context of rational choice models in which asset prices may be indeterminate due to self-fulfilling expectations.<sup>31</sup> While it is straightforward to construct these models, they are almost impossible to test empirically. The ‘bubble’ component is whatever is not explained by the model, but this leaves open the possibility that the ‘bubble’ is explained by an alternative hypothesis not considered by the model. Expectations cannot be observed directly and so these models are prone to misspecification. Consequently, ‘current empirical tests for bubbles do not establish the case that bubbles exist in asset prices.’<sup>32</sup>

Another type of rational ‘bubble’ may arise due to imperfect information or incomplete markets. The various forms of the efficient markets hypothesis (EMH) hold that asset prices reflect available information. In the context of specific asset pricing models, the hypothesis yields testable implications, such as the absence of profitable trading rules and that currently available information does not forecast future asset prices. Empirical evidence suggests that the EMH is a good approximation of the behaviour of asset prices, although violations of its predictions can be found in a wide variety of settings.

The EMH is commonly misinterpreted to mean that informationally efficient markets also result in an efficient allocation of resources. However, information is not costless and markets are often incomplete. There are a broad range of models that describe how assets can be mispriced due to imperfect, incomplete or asymmetrical information. Asset prices may therefore be informationally efficient given existing institutional settings and yet misallocate resources. This is an argument for improving the information content and completeness of markets, not for displacing or overriding them. Yet violations of the EMH are often misinterpreted as an argument against the allocative role of markets. In this respect, the EMH is analogous to the idea of perfect competition in markets for goods and services. No one believes that any real-world market for goods and services is perfectly competitive, and violations of the assumptions of the perfectly competitive model do not lead us to reject the model’s usefulness or the role of markets in setting prices.

#### *Irrational bubbles*

Most people who use the term ‘bubble’ have in mind ‘irrational bubbles,’ where market or investor psychology rather than imperfect information and incomplete markets drives asset prices, although the market imperfections that give rise to ‘rational bubbles’ could also have a role in propagating irrational beliefs or speculative psychology. The definitions of irrational ‘bubbles’ tend to be more descriptive rather than analytical, but still rely on some notion of self-fulfilling expectations to explain alleged episodes of mispricing in asset markets.

The *New Palgrave Dictionary of Economics* defines a ‘bubble’ as ‘asset prices that exceed an asset’s fundamental value because current owners believe they can resell the asset at an even higher price.’<sup>33</sup> Charles Kindleberger wrote that ‘a bubble may be defined loosely as a sharp rise in price of an asset or a range of assets in a continuous process, with the initial rise generating expectations of further rises and attracting new buyers—generally speculators interested in profits from trading in the asset rather than its use or earning capacity.’<sup>34</sup> Robert Shiller suggests a definition

that has metaphysical overtones, describing a ‘bubble’ as ‘a period when investors are attracted to an investment irrationally because rising prices encourage them to expect, at some level of consciousness at least, more price increases ... The bubble comes to an end when people no longer expect the price to increase.’<sup>35</sup>

The various elements of the preceding definitions of an ‘irrational bubble’ suffer irreparable analytical shortcomings, which can be considered in turn.

#### *Expectations of selling at a higher price*

Few people buy or hold an asset in the expectation of making a loss, so we cannot distinguish a ‘bubble’ based on the expectations of the buyer or holder of an asset. Moreover, for every buyer of an asset, there must be a seller, whose contrary expectations also need to be accounted for. Attributing market phenomena to ‘expectations’ merely pushes the question back one step: what drives expectations? For many exponents of the idea of ‘bubbles’ in asset markets, these expectations, as well as investor psychology more generally, are completely exogenous. In other words, they have no model of investor behaviour or asset price determination. Hyman Minsky’s ‘financial instability hypothesis,’ for example, purports to provide an endogenous theory of an expectations-driven credit and business cycle, but does not actually model expectations.<sup>36</sup> Shiller suggests an epidemiological model for the *propagation* of ‘speculative psychology,’ but this still does not explain the origins or persistence of that psychology, or what triggers the bursting of a ‘bubble.’<sup>37</sup>

#### *Irrational behaviour*

The role of rationality in economics is widely misunderstood. As LeRoy notes, ‘rationality is not a substantive hypothesis about the world, but rather a conceptual tool used in formulating economic models.’<sup>38</sup> Even in the context of these models, the efficient markets hypothesis does not require all market participants to be rational. It requires only that there are enough rational traders to arbitrage profit opportunities arising from the actions of irrational traders. However, if rational traders are risk averse rather than risk neutral, they may be unwilling to perform this arbitrage function. Keynes argued that risk aversion may be asymmetrical because an investor who invests on the basis of ‘long-term expectation’ ‘run[s] greater risks than he who tries to guess better than the crowd how the crowd will behave’<sup>39</sup>—in other words, follows the herd. Risk aversion is likely to be highly variable across time and between different markets and market participants, so it difficult to generalise about its significance. Time-varying risk premia are in fact a possible explanation for the failure of many asset pricing models to reliably reflect fundamentals (see next subsection), but this is not due to irrationality as such.

**The efficient markets hypothesis does not require all market participants to be rational. It requires only that there are enough rational traders to arbitrage profit opportunities arising from the actions of irrational traders.**

The speculative activity that supposedly drives ‘bubbles’ is often said to reflect irrational behaviour on the part of investors. Such irrationality might explain why investors make systematic or forecastable errors, contrary to the predictions of rational choice models of asset price determination. A fundamental problem with this view is that ‘bubbles’ are episodic and variable phenomena, yet human rationality should be more or less constant within given institutional settings. If human rationality is variable within these settings, then we need a model that explains this variability. Once again, this just pushes the question back one step. The behavioural finance and experimental economics literature questions the rational choice assumptions underpinning standard models of economic and financial behaviour. This literature is notable for failing to advance a generally applicable alternative behavioural model, but even if such a model were found, it might struggle to explain the irregular occurrence of ‘bubbles.’ Much of this literature relies on static experimental results divorced from real-world institutional settings. The irony of the behaviouralist literature is that it has no general behavioural model. Instead, this literature now serves mainly as a laundry list of actual or potential exceptions to the efficient markets hypothesis—to be ritually recited to either dismiss the role of markets as allocators of capital or to explain away market outcomes that do not conform with the prior beliefs of the analyst.

*Disconnect from fundamentals*

'Bubbles' are often defined as price movements that cannot be explained with reference to known or observable fundamentals. Many markets, most notably equity and foreign exchange markets, are characterised by price movements that are too large to be explained with reference to fundamentals. However, this is true not only of alleged 'bubble' episodes, but seems to be a pervasive characteristic of these markets at all times. Asset prices do not have simple and deterministic relationships with known fundamentals, even during non-'bubble' episodes. If they did, there would be no need for markets to set prices. Buyers and sellers could simply agree on the value of assets on a bilateral basis without the benefit of organised markets. As Benjamin Graham and David Dodd said in their 1934 classic, *Security Analysis*, the market is not a weighing machine.<sup>40</sup>

Markets exist to facilitate price discovery in the face of both risk and uncertainty. Risk may be difficult to quantify in the context of standard valuation models because risk premia may vary

**Asset prices do not have simple and deterministic relationships with known fundamentals.**

considerably over time. Uncertainty is by definition unquantifiable, using Frank Knight's distinction between risk and uncertainty.<sup>41</sup> The inability to model uncertainty means that empirical tests for 'bubbles' can never be definitive. Allan Meltzer argues that imperfect knowledge of future fundamentals provides an alternative model of asset price behaviour that does not rely on either rational or irrational 'bubbles,' and is consistent with the observation of large swings in asset prices.<sup>42</sup> Since policymakers fully share in such uncertainty, Meltzer's

model of asset price behaviour provides a strong argument against the existence of 'bubbles' and an activist approach to asset prices by monetary policy.

Many of those who talk of 'bubbles' in asset prices often fall back on fundamental explanations for asset price movements, implicitly acknowledging that 'bubble' explanations are ultimately unsatisfactory. For example, Shiller often lapses into fundamental explanations for the 'bubble' in US house prices. He notes the many failures in the regulation of housing finance and observes that the collapse in house prices was concentrated in the lower end of the market, where sub-prime lending activity was also concentrated. He also concedes that 'there are certain basic economic laws that—while they may be bent over shorter intervals—ultimately always assert themselves in the long run.'<sup>43</sup> Shiller's earlier work *Irrational Exuberance* was largely built around the observation of statistical mean reversion in equity prices, with the behavioural finance component tacked on in an effort to disguise the fact that he otherwise had nothing to say about the determination of asset prices.<sup>44</sup>

Similarly, modern proponents of the Austrian business cycle theory (ABCT) of the 1920s argue that 'bubbles' in asset prices are the result of a monetary policy-induced expansion in money and credit that drives both asset prices and the business cycle more broadly.<sup>45</sup> As a stylised account of the business cycle, this view informs much popular commentary, notably by *The Economist* magazine, which likes to claim that 'the Austrian school of economics offers perhaps the best framework to understand what is going on.'<sup>46</sup> In fact, the ABCT is inconsistent with current institutional realities and modern macroeconomic theory and evidence.<sup>47</sup> There is only a very loose relationship between official interest rates and growth in broad money and credit aggregates under current central bank operating procedures.<sup>48</sup> The ABCT is a fundamental explanation for 'bubbles' because Austrians have an axiomatic theory of the relationship between monetary policy and asset prices. However, the ABCT implicitly assumes some investor irrationality, namely, that investors fail to learn from previous cycles. Proponents of the ABCT argue that this is due to the failure of economic agents to understand or accept their theory—in other words, the theory holds only because most people reject it.<sup>49</sup> Unlike many of the contemporary exponents of the ABCT, Mises both anticipated and accepted the implications of a quasi-rational expectations view of monetary policy and the business cycle:

The teachings of the monetary theory of the trade cycle are today so well known even outside the circle of economists, that the naïve optimism which inspired the entrepreneurs in the boom periods of the past has given way to a certain skepticism. It may be that businessmen will in the future react to credit expansion in another

manner than they did in the past. It may be that they will avoid using for an expansion of their operations the easy money available, because they will keep in mind the inevitable end of the boom ... as the boom comes to an earlier end, the amount of malinvestment is smaller and in consequence the following depression is milder too.<sup>50</sup>

Note that the supposed failure to learn what some Austrians view to be the correct model of the business cycle is distinct from the question of whether rational expectations render monetary policy ineffective. Both monetarists and New Keynesians would not dispute the Austrian view that monetary policy is effective to some degree, even in the presence of rational expectations. It should be noted that many Austrian School economists reject the ABCT as an equilibrium theory that departs from Austrian School methodology. Leland Yeager, for example, has called the theory an ‘embarrassing excrescence.’<sup>51</sup>

### *‘Bubbles’ in everything*

A major problem with the informal, descriptive approach to defining a ‘bubble’ is that it potentially describes too much. There are few asset classes or markets that have escaped the ‘bubble’ characterisation in recent years. Technology stocks at the turn of the century and, more recently, US house prices are the most frequently cited examples of recent ‘bubbles.’ However, the ‘bubble’ label has also been applied to almost every conceivable asset class: credit markets in the run-up to the 2007–08 credit crisis; bond markets such as US Treasuries; commodities (most notably oil, but including many other commodities ranging from coal and uranium to Indonesian seaweed); various currencies (most notably, the US dollar around 2001–02); fine art; and even whole countries, such as Japan’s ‘bubble economy’ of the 1980s and China more recently.<sup>52</sup> The all too frequent use of the ‘bubble’ characterisation suggests that it refers to widespread, if episodic, phenomena. However, the more frequent and widespread ‘bubbles’ are thought to be, the less likely it is that the term ‘bubble’ describes something that is in any way exceptional or that would distinguish it from the normal functioning of markets.

**There are few asset classes or markets that have escaped the ‘bubble’ characterisation in recent years.**

The idea of ‘bubbles’ in asset prices quickly breaks down as soon as one tries to give it analytical coherence or empirical substance. Most commonly, the idea of a ‘bubble’ is little more than a tautology or circular argument: A ‘bubble’ is defined by its characteristics but with no underlying theory or model to explain why ‘bubbles’ occur. Once we begin to define such a theory or model, we are back in the realm of economics that requires theory and evidence rather than the lazy assertion that underpins much of the commentary on asset prices.

### **‘Bubbles’ as historical myth**

While there is little agreement among economists about what constitutes a ‘bubble,’ the concept has a strong hold on the popular imagination. This is due to a number of historical episodes that are widely believed to exemplify the idea of ‘bubbles’ in asset prices. The Dutch ‘tulipmania’ of the 1630s is the most frequently cited example, along with the South Sea and Mississippi bubbles of the eighteenth century. However, recent scholarship has exposed these historical ‘bubble’ episodes as myths. According to Goldgar’s exhaustive examination of the historical record, the tulip ‘bubble’ is ‘based on one or two contemporary pieces of propaganda and a prodigious amount of plagiarism ... most of what we have heard about it is not true.’<sup>53</sup> The propaganda against commodity speculation in Holland at this time reflected hostility to capitalism, the cosmopolitanism brought about by international trade and a view that one should not value material things more highly than God. Those who cite the tulip ‘bubble’ today are thus unconsciously recycling pre-modern superstitions and prejudices. Peter Garber shows that the pricing in tulip markets in the 1630s was not historically exceptional, while also highlighting the fundamental basis for other alleged ‘bubble’ episodes such as the South Sea and Mississippi bubbles.<sup>54</sup>

The resilience of the tulip and other historical ‘bubble’ myths can be traced in large part to Charles Mackay’s widely cited, but little read, 1841 book *Extraordinary Popular Delusions and the Madness of Crowds*. Mackay viewed asset price inflations as ‘moral epidemics,’ which had the unfortunate consequence of raising the unworthy above their proper station:

A luxury, till then unheard of, was introduced, bringing in its train a corresponding laxity of morals. The overbearing insolence of ignorant men, who had arisen to sudden wealth by successful gambling, made men of true gentility of mind and manners blush that gold should have power to raise the unworthy in the scale of society.<sup>55</sup>

Much of the popular hostility to financial speculation reflects this concern that it results in undeserved gain. However, the propagation of historical bubble myths has not been confined to nineteenth century moralists like Mackay. Contemporary economists such as John Kenneth Galbraith, Charles Kindlebeger, and Paul Krugman have also promoted these myths. Both Goldgar and Garber note that today’s economists and commentators now routinely embellish the tulip ‘bubble’ myth as an anti-market morality tale. ‘Tulipmania’ is ‘now on such a mythological level that anyone feels the ability to embellish it, however falsely, to make a point. For what reason is the tulipmania generally invoked? The argument is always that the existence of tulipmania proves that markets are crazy.’<sup>56</sup>

Similarly, Bernanke’s study of the Great Depression found that ‘the correct interpretation of the 1920s ... is not the popular one—that the stock market got overvalued, crashed, and caused a Great Depression. The true story is that monetary policy tried overzealously to stop the rise in stock prices. But the main effect of the tight monetary policy ... was to slow the economy

**The Fed fell under ‘the control of a coterie of bubble poppers.’**

... The slowing economy, together with rising interest rates, was in turn a major factor in precipitating the stock market crash.<sup>57</sup> The US stock market was if anything undervalued in 1929, which lends further weight to the view that Fed policy was implicated in the crash.<sup>58</sup> The singular cause of the Great Depression of the 1930s, in Bernanke’s view, was that the Fed fell under ‘the control of a coterie of bubble

poppers.’ Bernanke is hardly alone in this assessment. It is a well-established consensus among serious economists, ranging all the way from John Maynard Keynes to Milton Friedman. In his *A Treatise on Money*, Keynes said, ‘I attribute the slump of 1930 primarily to the deterrent effects on investment of the long period of dear money which preceded the stock market collapse and only secondarily to the collapse itself.’<sup>59</sup> Friedman’s 1963 *A Monetary History of the United States* also laid blame for the Great Depression squarely at the feet of the Fed and its attempt to become ‘an arbiter of security speculation or values.’<sup>60</sup> It was Friedman’s study of the Great Depression that led him to so vigorously oppose any discretionary monetary policy. Even Stephen Cecchetti, an economist who favours an activist approach to asset prices on the part of monetary policy, concedes that ‘the view that the Great Depression was precipitated by the stock market crash of 1929 has not borne the test of time. Instead, the consensus today is that the proximate cause was flawed monetary policy.’<sup>61</sup>

The Fed’s attempts at managing asset prices in the late 1920s were mirrored in Germany, where Reichsbank President Hjalmar Schacht feared that capital was being diverted from ‘productive uses’ into a ‘Börsenblase’ (‘stock bubble’). Schacht’s view was that ‘nothing better could happen to us than it collapses.’ The subsequent Reichsbank-led credit tightening precipitated the ‘Black Friday’ crash in Berlin’s stock market on 13 May 1927.<sup>62</sup> The subsequent economic downturn was a factor in the demise of the Weimar Republic, with well-known consequences for Germany and the rest of the world.

None of this is to deny that there have been historical episodes of asset price boom and bust. However, analysis of these episodes needs to be based on more than historical myths and anti-capitalist morality play narratives. Labeling these episodes as ‘bubbles’ adds nothing to our understanding of the appropriate relationship between asset price cycles and monetary policy. Garber is correct when he says that:



'bubble' characterizations should be a last resort because they are non-explanations of events, merely a name that we attach to a financial phenomenon that we have not invested sufficiently in understanding. Invoking crowd psychology—which is always ill defined and unmeasured—turns our explanation to tautology in a self-deluding attempt to say something more than a confession of confusion.

Fascinated by the brilliance of grand speculative events, observers of financial markets have huddled in the bubble interpretation and have neglected an examination of potential market fundamentals.<sup>63</sup>

There is also no denying that asset price booms and busts have sometimes been associated with significant financial crises and economic dislocation. By the same token, many asset price booms and busts end benignly. Mishkin and White review fifteen US stock market crashes over the course of a century and find that only eight resulted in significant financial system stress, with an even smaller number being followed by severe economic downturns.<sup>64</sup> Cross-country studies of historical asset price booms and busts, including those associated with financial crises, show that they have taken place against the background of a wide range of monetary regimes and in both inflationary and deflationary environments. These studies demonstrate that the historical connections between monetary policy, asset prices, financial crises, and the business cycle are contingent at best and argue against conditioning monetary policy on asset price cycles.<sup>65</sup>

### **Blaming Greenspan: Two recent 'bubble' episodes**

The turn of the century boom and bust in technology stock prices and the more recent boom and bust in US house prices are widely viewed as 'bubble' episodes and both have been widely blamed on US monetary policy. In particular, Greenspan has been blamed personally for supposedly mismanaging US monetary policy. Scapegoating Greenspan is a simple and convenient narrative, although ignores the fact that monetary policy is the collective responsibility of the Federal Open Market Committee and that the Fed operates under a specific congressional mandate and is subject to congressional oversight. As we shall see, this narrative overestimates the likely influence of US monetary policy on stock and house prices and the broader economy. It is also in contrast to an earlier narrative, now largely forgotten, that credited Greenspan with averting a severe downturn in the immediate aftermath of the 1987 stock market crash.<sup>66</sup> Central bankers are not exempt from the old saying that 'nothing succeeds like success.' Both episodes are instructive for what they tell us about the relationship between monetary policy and asset prices.

#### *Greenspan and the 'tech wreck'*

Was there a stock market 'bubble' in 1996 or even in 2000? Robert Shiller maintains that the US stock market bubble 'began in 1982, accelerated in the late 1990s and peaked in early 2000.'<sup>67</sup> To attribute nearly 20 years of price action in US stock markets to a single 'bubble' episode makes a complete nonsense of the concept, not least because it entirely subsumes the 1987 stock market crash. Shiller's *Irrational Exuberance*, first published in 2000, has been widely credited with predicting the technology stock price crash of that year. In fact, the book explicitly disavowed making a prediction on the future course of stock prices, arguing that 'whether the stock market falls or continues its upward climb in the opening years of the twenty-first century will neither prove nor disprove this book.'<sup>68</sup> This is typical of the unfalsifiable nature of most 'bubble' claims. Shiller had been making essentially the same argument since at least 1981, on the threshold of a multi-decade bull market that began in 1982.<sup>69</sup> He did predict in December 1996 that the S&P 500 stock market index would show no real appreciation over the next 10 years and that 'long run investors should stay out of the market for the next decade.'<sup>70</sup> In fact, between December 1996 and December 2006, the S&P 500 stock market index saw annualised returns of 5.89 percent after inflation and the reinvestment of dividends (4.22 percent without re-investment), despite a significant market downturn between 2000 and 2003.

Jeremy Siegel notes that 'non-tech stocks were never in a bubble, neither in 1996 nor when the S&P 500 Index reached its peak in March 2000. If one takes tech and the tech-related telecom stocks out of the S&P 500, the remaining stocks were actually depressed when the tech stocks

hit their peak. From March 10, 2000, when the S&P 500 hit its all-time high, through the end of November [2006], an index of all non-tech stocks experienced a very healthy annual return of 8.2%, indicating no overvaluation whatsoever when the popular averages, bloated by the tech bubble, reached their peak.<sup>71</sup> This poses a fundamental problem for the claim that the ‘bubble’ was due to monetary policy: Why would an accommodative monetary policy only manifest in one sector of a single asset class rather than in equities or asset prices more generally? It also raises the question of how monetary policy could be expected to contain a ‘bubble’ confined to a specific sector of the stock market—without doing significant damage to the broader economy. Siegel concludes that ‘history has exonerated Alan Greenspan’s policy during the late 1990s.’ The intellectual humility exhibited in Greenspan’s December 1996 ‘irrational exuberance’ speech was vindicated, whereas Shiller’s suggestion that he could forecast an ‘irrational’ market was shown to be profoundly mistaken.

**Why would an accommodative monetary policy only manifest in one sector of a single asset class?**

Peter Hartcher’s *Bubble Man*<sup>72</sup> best exemplifies the many populist, morality play narratives that seek to scapegoat Greenspan in relation to this episode. With characteristic hyperbole, Hartcher maintains that ‘Alan Greenspan was not prepared to contain or manage in any way one of the most deluded and dangerous market manias in four centuries of financial capitalism.’<sup>73</sup> He argues that from 1996, Greenspan understood the risks associated with the stock market boom, but out of political timidity, did ‘absolutely nothing about it.’<sup>74</sup> The main evidence offered for his claim that monetary policy from 1996 onwards was excessively

accommodative of rising stock prices is that ‘Greenspan’s Fed made a net change to official interest rates of -1.25 percentage points during the bubble years.’<sup>75</sup> Both inflation and nominal interest rates had been in secular decline throughout the industrialised world since the early 1980s, so any sum of changes in nominal interest rates is likely to pick up this downtrend. The Fed was hardly alone in this. The figure for the RBA over the same period discussed by Hartcher was -2.75 percentage points. Hartcher’s reference to a ‘21%’ fall in the Fed funds rate<sup>76</sup> tells us a lot about the global decline in inflation over this period, but almost nothing about the actual stance of US monetary policy. The stance of monetary is best measured with reference to the level of the real interest rate relative to the neutral or equilibrium real rate of 2 percent for the United States suggested by Taylor’s rule.

Hartcher acknowledges that the Fed easings at the end of 1998 in response to the aftermath of the Asian crisis and the collapse of the hedge fund Long-Term Capital Management were necessary. He even concedes that these actions were ‘handled judiciously and well’ by the Fed,<sup>77</sup> so he can only claim three easings, totaling -0.75 percentage points, for his ‘bubble’ accommodation thesis. The Fed tightened aggressively from 1999, and Hartcher suggests these Fed funds rate increases contributed to the stock price collapse and subsequent recession. He also claims that the Fed tightening of the mid-1990s was appropriate. So Hartcher’s claim boils down to the very implausible one that somewhere between the easing cycle that began in July 1995 and the concerted tightening that began in June 1999, US monetary policy was accommodative of what he calls ‘the biggest speculative mania the world has seen.’<sup>78</sup> This period was in fact punctuated by one Fed tightening, in March 1997, but Hartcher maintains this was not enough. Hartcher never ventures to suggest by how much the Fed should have tightened over this period. Instead, he quotes Fed research on the elasticity of stock prices to Fed funds rate shocks contained in a 2003 speech by then Federal Reserve Board Governor Ben Bernanke. Hartcher says that the idea that ‘monetary policy has a strong influence over the market ... is supported by all the evidence from within the Fed itself.’<sup>79</sup> Hartcher doesn’t mention Bernanke’s conclusion that the effect of monetary policy on stock prices is actually trivial relative to the variability in stock prices, implying that ‘monetary policy can lower stock values only to the extent that it weakens the broader economy, and in particular that it makes households considerably worse off. Indeed, according to our analysis, policy would have to weaken the general economy quite significantly to obtain a large decline in stock prices.’<sup>80</sup>

Hartcher maintains that Greenspan acknowledged that there was ‘a stock market bubble problem’ in 1996, and that Greenspan failed to act against it because of a combination of political

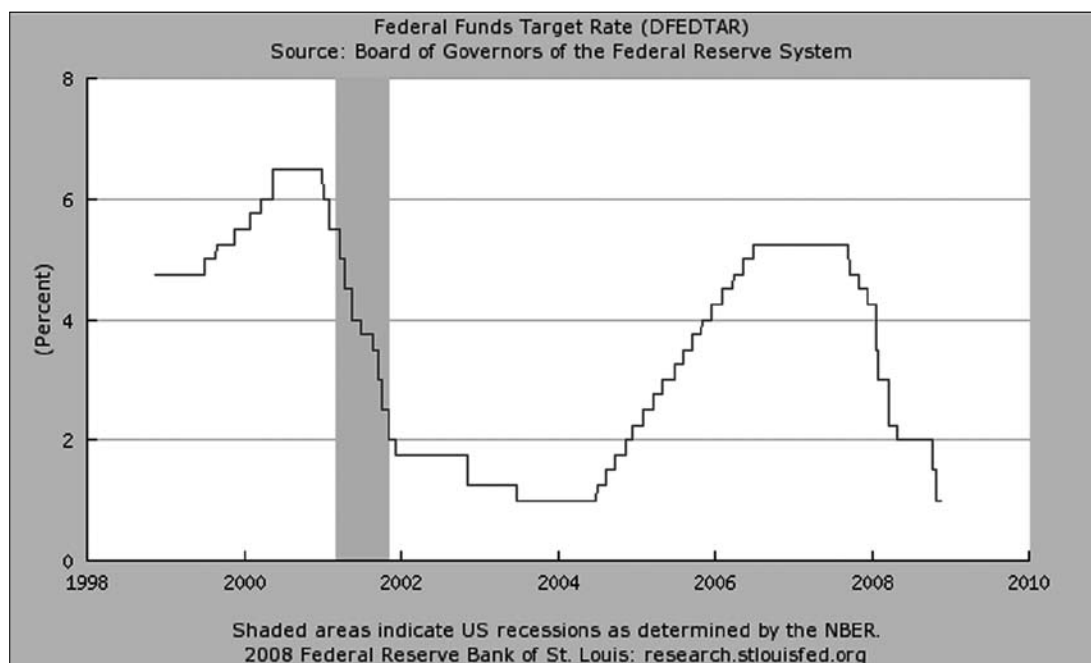
timidity and personal fallibility. There is an obvious contradiction underlying these arguments: If central bankers are as personally and politically fallible as Hartcher suggests Greenspan was, then this is a very strong argument against a discretionary monetary policy that seeks to second-guess the market on asset prices. Hartcher wants central bankers who are prepared to back their own judgment on asset prices against that of the market, but we have no basis for believing that other individuals would be less error prone or fallible than Greenspan given the institutional environment in which the Fed Chair operates. Hartcher acknowledges that Greenspan conducted monetary policy in a highly discretionary way, yet concludes from Greenspan's supposed failings that central bankers should exercise more discretion in relation to asset prices.

#### *Greenspan, the housing 'bubble,' and the credit crisis*

The boom and bust in US housing and the subsequent global credit crisis beginning around August 2007 has also been blamed on Greenspan's Fed, particularly the easy monetary policy settings put in place following the 2001 recession. There is no dispute that US monetary policy was 'easy' at this time, since this was the explicit intention of Fed policy. The Fed had closely studied Japan's experience with deflation and the zero bound on nominal interest rates from the mid-1990s onwards. The main lesson the Fed took from the Japanese experience was that monetary policy should respond aggressively to pre-empt the threat of consumer price deflation and the zero bound on nominal interest rates.<sup>81</sup> This experience heavily conditioned the Fed's approach to monetary policy during its easing cycle between 2001 and 2004. The US official interest rate—the Fed funds rate—was lowered to 1 percent by June 2003, the same month in which the US unemployment rate reached a cyclical peak of 6.3 percent. The Fed funds rate was held at 1 percent until June 2004 (see chart 1, shaded bars are recessions as defined by the US National Bureau of Economic Research).

**There is no dispute that US monetary policy was 'easy' at this time, since this was the explicit intention of Fed policy.**

**Chart 1:** US Fed Funds Rate (percent)



This easy policy stance was designed to pre-empt what was then perceived as a serious risk of consumer price deflation. The Fed was hardly alone in this concern. The International Monetary Fund convened an interdepartmental taskforce on deflation, which concluded in April 2003 that 'it is better to prevent deflation than to try to cure it, and monetary policy must take the lead.'<sup>82</sup> In this, Fed policy was successful. The question is whether this easy policy stance then had the

unintended consequence of fueling the US housing cycle and, therefore, being a causal factor in the subsequent global financial crisis.

An alternative interpretation of the Fed's easy policy stance during this episode is that the US economy is not particularly sensitive to changes in official interest rates. The reduction in the US Fed funds rate to 1 percent between June 2003 and June 2004 points to Fed policy being ineffective rather than destabilising. This lack of monetary policy effectiveness can be attributed to the weak relationship between the Fed funds rate and longer term interest rates, including US mortgage interest rates, which are largely market determined.

The level of nominal interest rates tells us very little about the stance of monetary policy. High nominal rates may reflect high rates of inflation that in turn reflect monetary policy that is too easy. Low nominal interest rates may reflect too low a rate of inflation, suggesting that monetary policy is too tight. What matters is the inflation-adjusted or real interest rate and its relationship with the neutral or equilibrium real interest rate. The Taylor rule, named after the economist John Taylor, suggests that a neutral real interest rate for the United States is 2 percent. As chart 3 shows, the real Fed funds rate was negative between October 2002 and October 2005, implying that monetary policy was relatively easy.

The Taylor rule allows us to benchmark the stance of monetary policy to the historical response of the Fed funds rate to inflation and the level of economic activity. Deviations from the rule measure the degree to which monetary policy is too easy or too tight. Applying his rule, Taylor maintains that 'during the period from 2003 to 2006 the federal funds rate was well below what experience [sic] during the previous two decades of good macroeconomic performance—the Great Moderation—would have predicted.'<sup>83</sup> Taylor concludes from this episode that monetary policy should 'stay with the systematic, predictable, principles-based policy that has worked well for most of the Great Moderation period. That is, adjust the short term interest rate according to macroeconomic developments in inflation and real GDP and be wary of adjustments based on other factors.'<sup>84</sup>

**There is not a straightforward relationship between the official interest rate and longer term interest rates.**

However, while Taylor is correct in arguing against discretionary monetary policy, he is wrong in asserting that the accommodative policy stance between 2003 and 2006 relative to the Taylor rule was a significant positive influence on house prices. There is remarkably little empirical support for this assertion.<sup>85</sup> Federal Reserve Board Research has found only a weak relationship between interest rates and house prices.<sup>86</sup> If house prices were particularly sensitive to changes in the Fed funds rate, these prices should have started deflating rapidly from mid-2004 when the Fed began a new tightening cycle. By the time the credit

crisis hit in August 2007, the Fed funds rate had been unchanged at a broadly neutral setting for more than twelve months. We are also again left with the question of why easy monetary policy should manifest in a single asset class and why previous episodes of easy monetary policy did not also result in similar housing booms and busts.

Financial institutions make use of the Fed funds rate in their overnight transactions with each other. In adjusting the Fed funds rate, monetary policy seeks to influence a broad range of other lending rates that are used more widely throughout the economy. However, especially in the United States, there is not a straightforward relationship between the official interest rate and longer term interest rates, which are largely market-determined and reflect expectations for a wide range of factors, including future changes in the Fed funds rate.

In the context of globally integrated capital markets, long-term interest rates are likely to reflect global influences as much as domestic policy. In an interview with the German newspaper *Die Zeit* on 30 January 2008, Greenspan highlighted the implications of the globalisation of capital markets for the effectiveness of monetary policy:

Global forces can now override most anything that monetary and fiscal policy can do. Long-term real interest rates have significantly more impact on the core of economic activity than the individual actions of nations. Central banks have increasingly lost their capacity to influence the longer end of the market. Two to three decades ago

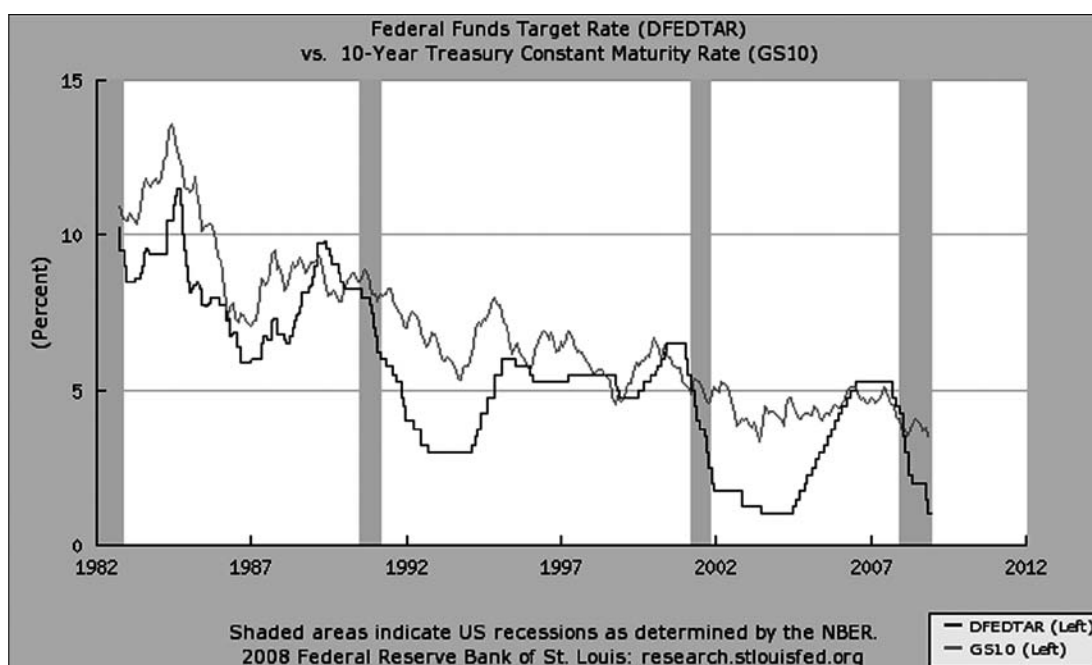
central banks were dominant throughout the maturity schedule. Thus, the more important question is the direction of long-term real interest rates...

The resources of central banks relative to the size of global forces have markedly diminished. We have 100 trillion dollars of arbitragable long-term securities in the world today so that even large movements initiated by central banks have little impact ... Global forces fostering global equilibrium have become by far the most dominant influence for financial and economic activity. Governments have ever less influence on how the world works...

There is no mechanism suggesting that US monetary policy with its rates for one-day money affects global long-term real interest rates.

Consistent with Greenspan's view, the ten-year bond yield remained relatively steady compared to the Fed funds rate through the 2001–04 easing cycle and most of the subsequent tightening cycle (see chart 2).

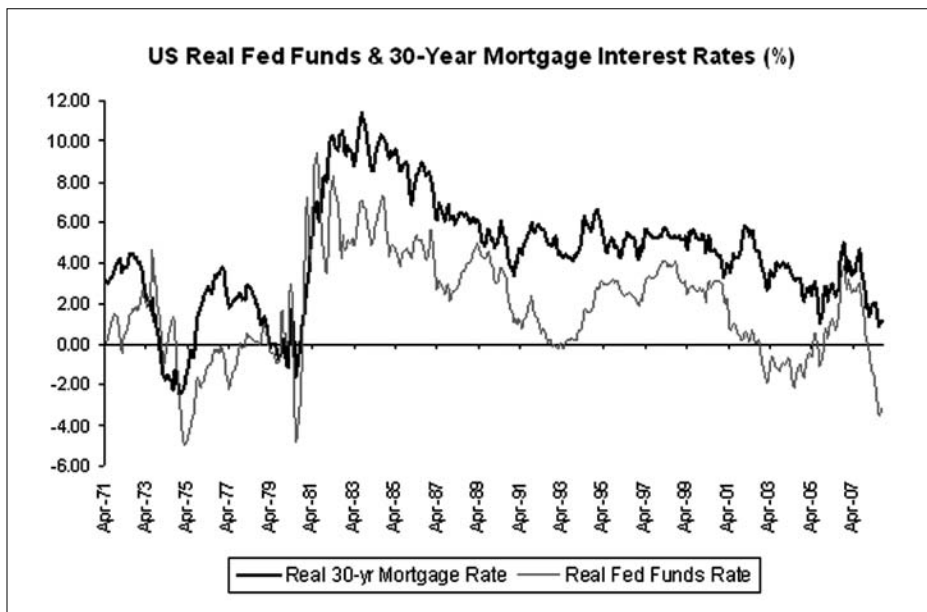
**Chart 2:** US Fed Funds Rate and 10-Year Treasury Yield (percent)



Longer-term interest rates were not nearly as accommodative as the level of the Fed funds rate might otherwise suggest. By the same token, longer-term yields did not increase dramatically after the Fed began tightening again in 2004. The behaviour of long-term bond yields must be attributable to factors other than Fed policy or policy expectations. Greenspan called the behaviour of bond yields at this time a 'conundrum'.<sup>87</sup> Since this was also a global phenomenon, country specific explanations for the 'conundrum' are unsatisfactory. Greenspan's successor, Ben Bernanke, attributed low bond yields to a 'global saving glut',<sup>88</sup> whereby 'excess saving' in developing countries lowered interest rates in developed countries. The repression of domestic capital markets in many developing countries makes the United States and other developed economies the only ones with capital markets deep and liquid enough to accommodate the flow of global saving.

US mortgages are typically funded at even longer maturities further out along the yield curve. The following chart shows the real US Fed funds rate and the real 30-year mortgage interest rate (chart 3):

**Chart 3:** US Real Fed Funds Rate and 30-Year Mortgage Interest Rate (percent)



Like the ten-year bond yield, the 30-year mortgage interest rate remained relatively stable between 2001 and 2004 compared to the Fed funds rate. The lack of transmission from the Fed funds rate to market-determined interest rates further out along the yield curve helps explain why monetary policy struggled to gain traction over the US economy following the 2001 recession. This in turn explains why the Fed took its official interest rate as low as it did. Even in the wake of the recent credit crisis and the dramatic easing in Fed policy seen in 2007 and 2008, the 30-year mortgage rate has been so stubbornly resistant to reductions in the Fed funds rate that there have been proposals, even from conservative economists, for government intervention to fix the 30-year mortgage interest rate at 4.5 percent.<sup>89</sup>

It should be conceded that many of the new, adjustable-rate mortgages that were written in the first half of the decade were set at rates that were at a discount to fixed 30-year mortgage rates, reflecting cheaper short-term funding available as a result of the low Fed funds rate.<sup>90</sup>

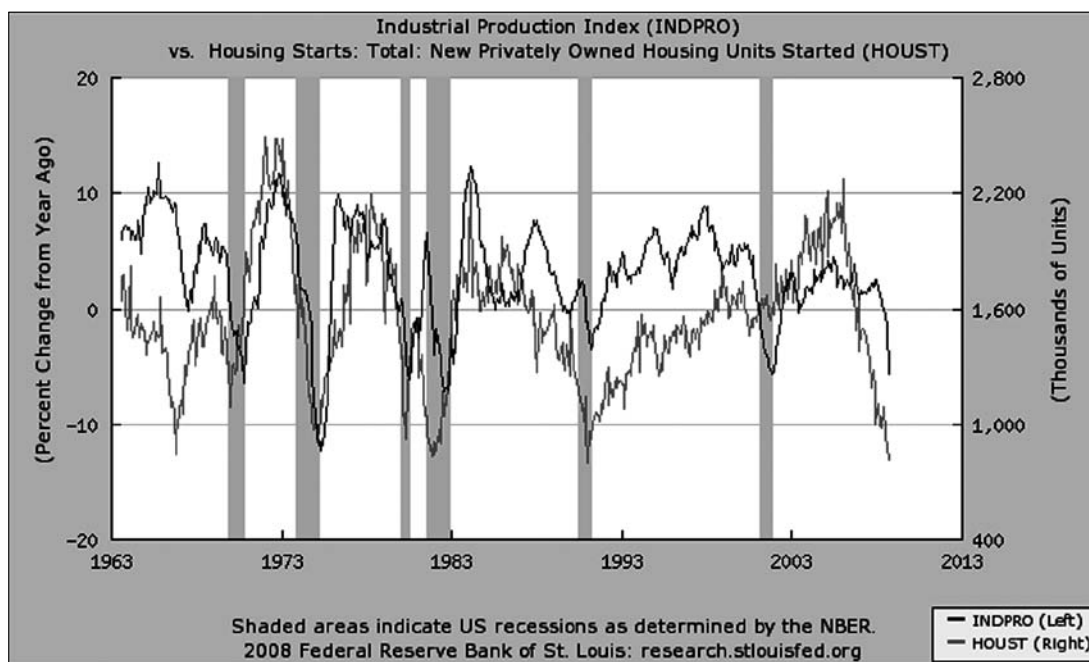
The low official interest rate may have had a larger impact on new rather than established lending, so easy monetary policy may have been more influential at the margin than in aggregate. However, the 30-year rate is still a better reflection of the overall cost of funds to US borrowers and, therefore, of the implications of interest rates for the housing sector and the economy more broadly.

The expansion in US housing construction from the early 1990s trough showed little regard to the business cycle. The housing sector was barely affected by the broader downturn in the US economy in 2001.

This is illustrated in the following chart, which shows annual growth rate in US industrial production, a proxy for the broader US economy, together with private new dwelling starts, a proxy for the housing sector. The shaded bars are recessions as defined by the US National Bureau of Economic Research (chart 4):

**The expansion in US housing construction from the early 1990s trough showed little regard to the business cycle.**

**Chart 4:** US Industrial Production (Annual Percentage Change) and New Privately Owned Housing Starts (Level)



The 2001 recession was exceptional compared to previous business cycles, in that housing activity did not see a significant downturn along the rest of the US economy. Industrial production was subdued coming out of the 2001 recession (note the double dip into negative annual growth during 2003), while housing continued to enjoy a strong expansion. This decoupling from the broader economy might be thought to support the view that US housing was a ‘bubble,’ but it also highlights the dangers of responding to sector-specific asset price inflation that is not related to broader economic activity. Had monetary policy been calibrated to conditions in the housing market, the broader US economy would have suffered. If the 2001 recession could not tame the US housing boom, then it is hard to see how tighter US monetary policy could have done so without inflicting significant, and potentially deflationary, collateral damage on the rest of the economy, a danger both Greenspan and Bernanke highlighted at the time.

The Fed was not alone in presiding over accommodative policy settings in the early part of this decade. Based on Taylor rule benchmarks, monetary policy in Australia, Canada and much of Europe was also ‘too easy’ at this time. This may reflect the example set by US monetary policy, but it points to a common policy environment globally to which all central banks were responding. While there is cross-country evidence of a positive relationship between the extent of easy policy and the strength of housing investment during this period, this is entirely consistent with the objective of an accommodative policy stance, which is to broadly stimulate economic activity.<sup>91</sup>

The US monetary policy easing cycle between 2001 and 2004 was a success on its own terms because it achieved exactly what it set out to do: pre-empt the threat of consumer price deflation. This is not to say that there were no unintended consequences from this policy or that Fed policy had no role in the US housing boom and subsequent bust. However, relative to other factors—such as US government subsidies to risk-taking by home-buyers and financial institutions<sup>92</sup> and global influences on long-term interest rates—the contribution from monetary policy was likely much smaller than commonly assumed. This is also strongly suggested by the fact that the boom in house prices in the early to middle part of this decade was a global phenomenon, which makes country-specific explanations implausible. Even Shiller argues that US monetary policy cannot possibly account for a nine-year uptrend in US house prices.<sup>93</sup>

*Greenspan's legacy*

**The Fed did not have a mandate to pursue stability in asset prices and if it had done so, it might have destabilised the broader economy.**

During Greenspan's tenure at the Fed, the United States and the world economy experienced what came to be known as The Great Moderation, a new period of relative stability in output and prices, which has been attributed in part to the consensus approach to the conduct of monetary policy that emerged over the same period.<sup>94</sup> In terms of the Fed's dual statutory price stability and employment mandates, US monetary policy was an outstanding success. The Fed did not have a mandate to pursue stability in asset prices and if it had done so, it might have destabilised the broader economy and consumer prices with the same horrendous consequences that followed similar policies pursued in the late 1920s in the United States and Germany. Henderson and Hummel render a balanced assessment of Greenspan's legacy in concluding that:

Alan Greenspan stands out as the most competent—and arguably the only competent—helmsman of United States monetary policy since the creation of the Federal Reserve System...

[H]is policy may have ended up slightly too discretionary. But that possibility hardly justifies the 'asset bubble' hubris of those economic prognosticators who, only well after the fact, declaim with absolutely certainty and scant attention to the monetary measures, how the Fed could have pricked or prevented such bubbles.<sup>95</sup>

### **Short-run pain versus long-run gain: Are 'bubbles' in asset prices harmful in the long-run?**

Asset price inflation or deflation is rarely harmful in itself and does not always lead to financial crises or economic dislocation.<sup>96</sup> Financial markets and the real economy can readily accommodate large swings in asset prices. The harm of asset price inflation and deflation generally arises from its interaction with poor regulatory frameworks and weak financial systems, which may in turn exacerbate the asset price cycle.<sup>97</sup> Japan's economy in the late 1980s provides an example of an institutional environment in which there were few effective checks on financial sector excesses, which was mirrored on the downside in the 1990s by the inability of the Japanese economy to effectively deal with asset and consumer price deflation. Japan's rolling recession of the 1990s and the 2000s was symptomatic of broader structural problems with the Japanese economy, of which asset and consumer price deflation were merely symptomatic rather than causal.<sup>98</sup>

Pronounced asset price inflation is often associated with the introduction of new technologies, suggesting that 'bubbles' are real rather than purely monetary phenomena. Jason Potts argues that 'bubbles are a normal part of the market capitalist system when they emerge spontaneously from the market discovery process, and problematic only when artificially induced by ill-considered policy.'<sup>99</sup> Potts postulates a 'real bubbles theory' as follows:

Bubbles are good because they promote variety and experimentation in an economic system. The bubble process facilitates the sort of structural change that economic growth always, in some form, requires. Economic systems, when they are open and therefore competitive, need bubbles to grow. So they require institutional systems and policy frameworks capable of (perhaps vigorous) interaction with bubbles.

A bubble works by concentrating financial liquidity and entrepreneurial attention onto an asset class and its forward prospects. Inside a bubble, the cost of experimentation, and therefore variety generation, is lowered and, by incentive effect, the process of structural change is accelerated. Access to finance is easy inside a bubble. Similarly, the cost of failure is reduced, and the uptake of novelty is high. The economy becomes energised around the bubble, as do the entrepreneurial spirits of agents who happen upon it. Learning is accelerated within a bubble, and radically new business ideas can get a start, as can radically new products. Real bubbles theory, then, is the



idea that from a bubble environment there flows the incipient variety upon which the evolutionary economic process of enterprise and wealth creation feeds. Bubbles breed variety, and variety feeds economic evolution, and therefore growth.<sup>100</sup>

Dan Gross makes a similar argument about the many innovations and long-run economic progress facilitated by historical ‘bubble’ episodes.<sup>101</sup> The short-run macroeconomic disturbances associated with asset price inflation and deflation need to be balanced against these long-run gains in innovation and economic growth. Even if monetary policy could achieve a smoother growth path by managing asset prices, this might come at the cost of a weaker cumulative economic performance in the long-run. The secular economic progress made since the Industrial Revolution, despite numerous alleged ‘bubble’ episodes, argues that they do not harm long-run economic growth and may even accelerate the innovations and productivity gains that are the main driver of that growth. This view of ‘bubbles’ as a real phenomenon argues against benchmarking asset prices to equilibrium conditions based on known fundamentals.

Asset price fluctuations should be regarded as the norm, not an aberration, and harmful only to the extent that they reflect distortions to a market-based system of capital allocation such as those implicated in the recent credit crisis. A monetary policy focused on price stability that anchors long-run inflation expectations should not give rise to such a distortion.

**The short-run macroeconomic disturbances associated with asset price inflation and deflation need to be balanced against these long-run gains in innovation and economic growth.**

## Implementing an activist approach to asset prices

Even if ‘bubbles’ are viewed as a problem requiring a monetary policy response, there are significant practical difficulties in operationalising an activist approach to asset prices on the part of monetary policy. These problems can be summarised under the headings of *identification*, *timing*, *calibration*, *moral hazard*, *indeterminacy*, and *legitimacy*.

### *Identification*

Policymakers face significant problems in identifying when a ‘bubble’ is in progress. Central banks do not typically have access to information or methods of analysis that are superior to those used in the private sector. Policymakers may face a different set of incentives in responding to asset prices, but these incentives are not necessarily an improvement on those faced by the private sector and may be subject to political pressures and other institutional constraints.

The most recent US housing cycle illustrates the ‘bubble’ identification problem. Federal Reserve Vice Chair Donald Kohn says that ‘I and other observers underestimated the potential for house prices to decline substantially, the degree to which such a decline would create difficulties for homeowners and, most important, the vulnerability of the broader financial system to these events.’<sup>102</sup> He also notes that the Fed examined whether US house prices were ‘overvalued’ throughout this episode ‘and arrived at a wide range of answers.’ As an economic adviser to President Bush and later as Federal Reserve Chairman, Ben Bernanke consistently rejected the notion that the United States was experiencing a housing ‘bubble’ or that a downturn in house prices would have significant implications for the broader economy.<sup>103</sup> While many now see this as a policy failure, in reality, it highlights the very limited ability of policymakers to identify and respond appropriately to asset price ‘bubbles’ in real time. Recessions and financial crises are largely unforecastable events because if they could be seen with anything approaching certainty, economic agents, including policymakers, would change their behaviour to avert them. Financial crises and recessions occur precisely because they reflect unanticipated developments.

### *Timing*

Following from the identification problem, there is also a problem in timing any policy response. The longer it takes to identify a ‘bubble’ with any confidence, the less likely it is that policymakers can respond in a timely fashion.<sup>104</sup> Measures taken to deflate a ‘bubble’ may be mis-timed,

especially given the ‘long and variable lags’ inherent in the transmission mechanism for monetary policy. This is a powerful argument in favour of the asymmetrical response to asset price inflation and deflation favoured by Greenspan as it minimises the identification problem and ensures that policy responses reflect actual rather than apprehended macroeconomic conditions.

#### *Calibration*

Calibrating the response of monetary policy to asset prices is also likely to be exceedingly difficult. The effects of monetary policy are necessarily economy-wide and cannot be confined to a single asset class. Monetary policy is too blunt an instrument to counter sector-specific ‘bubbles.’ The relationship between official interest rates and asset prices is even more tenuous than the ‘long and variable lags’ that are widely acknowledged to exist between official interest rates and the level of economic activity and inflation. As we have already seen, changes in official interest rates do not have straightforward or reliable relationships with long-term interest rates or other asset prices. Even the appropriate direction of the policy response is far from clear. Goodfriend notes that ‘there

### **Policy responses by the authorities in different countries may end up being mis-coordinated.**

can be no theoretical presumption that appropriate interest rate policy actions should be correlated positively with equity prices movements ... it is relatively easy to imagine practical situations in which it might be appropriate for interest rate policy to move in the opposite direction from asset price movements or not to react at all.<sup>105</sup> The weaker the connection between asset prices and fundamentals, the stronger the argument against using asset prices as either conditioning variables or

targets for monetary policy because of the increased risk that policy will be poorly calibrated to the non-financial side of the economy. Indeed, if ‘bubbles’ are defined by ‘irrational’ expectations and a lack of basis in fundamentals, it is not clear why monetary policy should have any affect in curbing a ‘bubble’ short of a scorched earth policy in relation the broader economy.

An additional calibration issue arises from the global integration of capital markets. For a large economy like the United States, which is an effective price-maker in international capital markets, it might be possible for monetary policy to influence domestic asset prices. For smaller open economies like Australia that are price-takers in these markets, domestic monetary policy may be dominated by offshore influences on asset prices. Policy responses by the authorities in different countries may end up being mis-coordinated, reducing their effectiveness and adding to volatility in global capital markets.

A recent example of a central bank conditioning monetary policy on asset prices in a systematic way is the Reserve Bank of New Zealand’s use of the trade-weighted exchange rate as part of a composite operating target between 1996 and 1999, known as the monetary conditions index. This practice was abandoned because the well-known volatility of exchange rates and their very loose relationship with economic fundamentals made it a poor basis for conducting monetary policy. A fixed or managed exchange rate regime can be viewed as a special case of targeting an asset price using monetary policy. Fixed exchange rate regimes have been largely abandoned since the early 1970s because of their role in promoting domestic macroeconomic instability and the propagation of macroeconomic shocks across countries. The same argument can be used against a domestic or international gold standard, under which the incidence of global financial crises was much higher than in the post-Bretton Woods era.<sup>106</sup>

#### *Moral hazard*

An activist approach to asset prices may give rise to moral hazard if investors take the view that policymakers are putting a floor under asset prices rather than merely undertaking to support the economy following an asset price bust. Many commentators have mistakenly interpreted the Fed’s asymmetrical approach to asset price booms and busts as constituting a floor under equity prices—the so-called ‘Greenspan put.’ Even though there is no empirical evidence to support this interpretation, these perceptions could become much more widespread if monetary policy were to adopt a more activist stance with respect to asset prices.<sup>107</sup>

### *Indeterminacy*

The official interest rate is only one of many channels for the transmission of monetary policy to the real economy. Asset prices also serve as transmission mechanisms, but these relationships are not very well understood. Using monetary policy to actively manage asset prices would further complicate these relationships and could even render them indeterminate due to policy-induced feedback between monetary policy and asset prices unrelated to broader economic conditions. Policymakers could end up chasing their own tail, adjusting monetary policy in response to asset price developments that were in turn brought about by previous changes in policy.

### *Legitimacy*

Central banks do not currently have mandates to actively manage asset prices. However, even if it were possible to define such a mandate, the ‘bubble’ identification, timing and calibration problems make it unlikely that an activist approach to asset prices would gain public support. Policymakers would need to explain why broader economic activity was being sacrificed in order to manage prices in a specific asset class. Monetary policy could become more vulnerable to political pressure from competing interests that stand to benefit from movements in asset prices, undermining the trend to greater central bank independence seen since the early 1990s. Policymakers would also quickly lose credibility if policy was rationalised with reference to multiple objectives that were realised only haphazardly. Like fixed exchange rate regimes, a regime of managed asset prices is unlikely to be politically robust and flies in the face of everything we have learned about how central banks achieve and maintain policy credibility with the public.

**Monetary policy could become more vulnerable to political pressure.**

### *‘Leaning Against the Wind’*

Borio and Lowe argue that while it may not be possible to identify ‘bubbles’ in given asset classes, their evidence suggests it might be possible to identify a ‘combination of events, in particular, the simultaneous occurrence of rapid credit growth, rapid increases in asset prices and, in some cases, high levels of investment—rather than any one of these alone—that increases the likelihood of problems.’<sup>108</sup> This is a less activist approach than explicit targeting of asset prices and is usually couched in terms of ‘leaning against the wind.’ This is not a major departure from the consensus approach, which views asset prices as one of many information variables for policy but not as an explicit target or conditioning variable. This approach is unexceptional to the extent that monetary policy should be based on all available information and a complete description of the economy. It is also consistent with a forward-looking approach to inflation targeting. The ECB already uses a two-pillar strategy that targets both consumer prices and monetary aggregates, which it argues more effectively captures long-run risks to price stability that might arise from financial imbalances.<sup>109</sup> In practice, however, the ECB has largely ignored its reference rate for monetary growth. The preceding discussion points to strict limits in extending this ‘lean against the wind’ approach, which should remain strictly subordinate to the objective of stabilising the real economy and consumer prices.

## **The wrong focus for a central bank**

Financial crises and recessions are more likely to arise in the context of weak and poorly regulated financial systems that give rise to undesirable interactions between asset prices, the financial system, and the real economy.<sup>110</sup> Government subsidies to risk taking and the regulation of the financial system are often implicated in financial crises, not least in the most recent global financial crisis.<sup>111</sup> Policymakers concerned about the risk of financial crisis need to focus their attention on appropriate prudential regulation and supervision of the financial system rather than cycles in asset prices.

It has been suggested that financial supervisors need to adopt a ‘macro-prudential’ approach, in addition to their more traditional ‘micro-prudential’ focus, based on a tougher regulatory response to emerging financial sector imbalances. This would help ensure that central banks are

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not distracted from their price stability mandate by financial system concerns. As Friedman noted, central banks have historically been prone to ‘put altogether too much emphasis on the credit effects of their policies and too little emphasis on the monetary effects of their policies.’<sup>112</sup> Since the early 1990s, there has been a trend to separate prudential policy from monetary policy to eliminate potential conflicts of interest between monetary policy and prudential supervision. Inflation tends to be lower in countries where prudential supervision is the responsibility of agencies that are separate from the central bank or finance ministry.<sup>113</sup> This approach has worked well in Australia where prudential supervision was removed from the responsibility of the RBA following the 1997 Wallis inquiry, although it may have worked less well in the United Kingdom.

### **Monetary policy and asset prices: The new socialist calculation debate**

In the ‘socialist calculation debate’ of the 1920s, Mises demonstrated the impossibility of economic calculation in the absence of market-determined prices for goods and services. Far from arguing that markets were perfect, Mises noted that ‘some mistakes are inevitable’ and that ‘uncertainty of future conditions ... is an inevitable concomitant of the dynamic nature of economic life.’<sup>114</sup> This is even more true for markets in assets. These irreducible errors and uncertainties can readily explain volatility in asset prices and the lack of a close relationship with observable fundamentals. Those who maintain that asset prices are prone to ‘bubbles’ mistake volatility for ‘irrationality’ because they do not understand the necessarily subjective and contingent nature of economic calculation in asset markets. The judgments of policymakers should not be allowed to substitute for market processes in the determination of asset prices. Policymakers do not have access to superior information or methods of analysis and are likely to be just as prone to any cognitive biases as financial markets participants. There is thus no reason to believe that policymakers can exercise superior judgment in the determination of asset prices. While policymakers do face different sets of incentives, these incentives are not necessarily superior, and may well be inferior, to those faced by private market participants.

Policymakers can help establish an institutional environment that facilitates the process of price discovery in asset markets and minimises the incidence of imperfect markets and incomplete information. This is the domain of market design and prudential regulation. The role of the central bank is to provide the economy with a nominal anchor by maintaining long-run stability in the general level of consumer prices. While central banks routinely intervene in short-term credit markets in the implementation of monetary policy, they should refrain from any attempt to explicitly manage or target asset prices more generally. This is not to argue that central banks should completely ignore developments in asset prices. These asset prices may convey information about the state and future direction of the economy, which may in turn help forecast consumer prices. Monetary policy should be based on all available information. However, monetary policy should not seek to second-guess the market on asset prices, not least because this would lead the market to second-guess the central bank’s response to asset prices, with the potential for even greater volatility in asset prices and the economy more generally. There is compelling historical evidence that previous attempts by central banks to manage asset prices have led to economic disaster.

There is little empirical evidence to support the view that United States monetary policy was responsible for the turn of the century ‘bubble’ in technology stocks or the more recent housing cycle in the United States and subsequent global financial crisis. To suggest otherwise is to greatly exaggerate the importance of monetary policy relative to other factors. The point of an inflation targeting framework is to minimise the importance of monetary policy to the broader economy and asset prices, not to become an ‘arbiter of security speculation and values.’ Central bankers themselves are now questioning the established consensus on the relationship between monetary policy and asset prices, forgetting the lessons of the past. This new ‘socialist calculation debate’ over the relationship between monetary policy and cycles in asset prices has major implications for the future viability of a market-based economic order.

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