

## *Asset Bubbles and Their Consequences*

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No. 103

May 20, 2008

### **Executive Summary**

In the past, the federal government has introduced moral hazard in the banking system through deposit insurance. Banks underpriced risk because of the federal guarantee that backed deposits. After banking crises in the 1980s and 1990s, deposit insurance was put on a sound basis and that source of moral hazard was mitigated. In its place, monetary policy has become a source of moral hazard. In acting to counter the economic effects of declining asset prices, the Federal Reserve has come to be viewed as underwriting risky investments. Policy pro-

nouncements by senior Fed officials have reinforced that perception. These actions and pronouncements are mutually reinforcing and destructive to the operation of financial markets. The current financial crisis began in the subprime housing market and then spread throughout credit markets. The new Fed policy fueled the housing boom. Refusing to accept responsibility for the housing bubble, the Fed's recent actions will likely fuel a new asset bubble. The cumulative effects of recent monetary policy undermine the case for free markets.

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**Monetary policy can generate moral hazard if it is conducted in a manner that bails investors out of risky and otherwise ill-advised financial commitments.**

## **Introduction**

“The Fed . . . is unwittingly contributing to a form of moral hazard—that it stands by ready to prop up the market if it fails, but will do nothing to stop it going up too high.”<sup>1</sup>

In recent years, investors have rationally come to believe that the Federal Reserve will intervene to prevent or offset the effects of declining asset prices. That belief was first summarized in the phrase “the Greenspan Put,” now the “Bernanke Put.” The current financial crisis is at least partly the outcome of this new approach to monetary policy.

Since the 1930s the federal government has insured bank deposits. That scheme inherently reduced the vigilance of bank depositors toward their banks, removing constraints on risk taking by the insured depository institutions. The situation became acute in the 1980s and 1990s, when undeterred risk taking by banks and thrift institutions led to a series of financial crises. Eventually the deposit insurance system was reformed and banking put on a sounder basis. It is time for a similar reform of monetary policy.

## **The Subprime Mortgage Crisis**

The popular press discovered subprime mortgage loans when two major originators of such loans, HSBC Holdings PLC and New Century Financial, disclosed increased loan loss provisions. HSBC is a globally diversified financial company and survived the crisis intact. New Century Financial fared much less well because of the concentration of its lending in this risky category. Its stock price collapsed after problems surfaced on February 8, 2007, and the company eventually declared bankruptcy.<sup>2</sup>

Problems spread to other lenders in the subprime market. By the end of 2007, more than 100 mortgage companies had suspended operations or sought buyers. The spread

between interest rates on subprime loans and those on safe treasury securities increased dramatically, indicating rising risk aversion to that market.<sup>3</sup>

The carnage continued into 2008 and eventually claimed investment house Bear Stearns, bailed out by JP Morgan Chase with assistance from the Fed and U.S. Treasury. The U.S. economy experienced a serious slowdown, as measured by the anemic annualized growth rate for real GDP of 0.6 percent in the fourth quarter of 2007. That weak rate of growth was repeated in the first quarter. Technically, the economy did not fall into recession.

The seeds of the subprime crisis were sown years earlier, and the collapse in that submarket of mortgage lending is linked to previous financial eruptions, such as the high-tech and telecom bust. The subprime collapse spread to other segments of housing finance. The crisis in housing finance in turn spread to other credit markets, even to interbank lending. The financial crisis is the latest in a series of financial bubbles whose existence reflects, at least in part, moral hazard in financial markets.

Moral hazard is the outcome of explicit or implicit guarantees to investors. At one time, deposit insurance was a major culprit. Today, monetary policy is fostering moral hazard. Monetary policy can generate moral hazard if it is conducted in a manner that bails investors out of risky and otherwise ill-advised financial commitments. If investors come to expect that the policy will persist, then they will deliberately take on additional risk without demanding commensurately higher returns for that risk. In effect, they will lend at the risk-free interest rate on risky projects, or at least at a lower rate than would otherwise be the case. Too much risky lending and investment will take place. Capital will have been misallocated.

## **Monetary Policy**

To simplify a complex theoretical issue, an ideal monetary policy is one that facilitates

and does not distort economic decisionmaking. In a market economy, the key decisions involve allocating resources to their most valuable use.<sup>4</sup> Market prices play a critical role in that process by signaling to everyone the relative scarcity of goods and urgency of ends.

Friedrich A. Hayek characterized the price system as a communications mechanism for transmitting information about economic values.<sup>5</sup> By communicating that valuable information, the price system helps coordinate economic activities. As with any communication system, it is desirable to filter out “noise,” extraneous signals that interfere with communication. Money is indispensable to price formation, but money can generate noise along with information. The *ideal* monetary policy is one in which there is no noise, only valid price signals. The *best possible* monetary policy would maximize the signal-to-noise ratio.<sup>6</sup>

Monetary noise comes about when policy changes the value of money. In economies on gold or silver standards, the discovery of new sources of the precious metal could set in motion forces leading to an expansion of the money supply and the depreciation in the value of money. In modern times money is created by printing it or through expansion of the liabilities of banks. In nearly all developed countries, the rate of that expansion is (or can be) controlled by central banks.<sup>7</sup>

Changes in the value of money create monetary noise because investors and ordinary individuals mistake changes in money prices for changes in relative prices. For instance, during inflation prices rise just to reflect the increase in money and not as the result of any shift in preferences for goods.<sup>8</sup>

The best possible monetary policy would seem to be one in which no change occurred in the value of the appropriate price index. The theory supporting a policy of zero or low price inflation is conventionally termed “monetarist” and its modern origins go back to Milton Friedman.<sup>9</sup>

A number of central banks, such as the Bank of England and the European Central Bank have adopted inflation targeting as official policy. The Fed has not done so offi-

cially. But it has heretofore behaved as if it has an inflation target, and markets believed that to be so. The Fed is widely believed to want inflation to remain under 2 percent—low but not zero.<sup>10</sup>

CPI inflation has remained above the Fed’s notional target for some time. In February 2008, the consumer price index for all urban consumers (CPI-U) was 4 percent higher than in February 2007. To put that figure in historical context, President Richard M. Nixon decided to impose comprehensive price and wage controls on August 15, 1971, because the CPI seemed stuck at 4 percent inflation or higher all that year (having actually hit a 5 percent annual rate the prior year).

Certainly Nixon chose the wrong remedy, but his intuition that 4 percent inflation was unacceptably high was on target. Yet why are most policymakers—as opposed to the public—now comfortable with that inflation rate? What has changed?

Actually nothing has changed for those who earn, spend, and save dollars. What has changed is that Fed officials prefer an inflation measure excluding food and energy (“core inflation”).<sup>11</sup> They have persuaded most public officials, but not the public, of the wisdom of that approach. It is an increasingly unpersuasive line of argument.

The Fed originally decided to exclude energy prices because it felt it was unreasonable to offset OPEC-induced supply shocks. The Fed wanted an inflation measure that focused on persistent movements. It did not want to be forced to offset one-time changes in the price level, focusing instead on inflation targeting. By similar logic, the Fed thought it wise to exclude food prices so as not to take on the responsibility of offsetting one-time changes in food prices due to weather shocks.

Whatever the original merits of the Fed’s approach, the globalization of food trade mitigates the effects of localized weather events on food prices. And rising energy prices are systematically demand-driven outcomes. Core inflation has become a misleading statistic, which disconnects policymakers from the experience of the public.

**An ideal monetary policy is one that facilitates and does not distort economic decisionmaking.**

**Ben Bernanke described the savings and loan crisis of the 1980s as “a situation . . . in which institutions can take speculative positions using funds protected by the deposit insurance safety net—the classic ‘heads I win, tails you lose’ situation.”**

Dollar users do not experience core inflation when they make purchases. What ordinary consumers purchase every day is exactly what is excluded from the core measure. For consumers, inflation is a tax and the core measure understates the tax rate.

Despite recent policy missteps, there is no question that monetary policy is much improved from the record of the late 1960s, 1970s, and early 1980s. That was the era of double-digit inflation and sky-high interest rates. Alan Greenspan has put monetary policy in historical context:

Although the gold standard could hardly be portrayed as having produced a period of price tranquility, it was the case that the price level in 1929 was not much different, on net, from what it had been in 1800. But, in the two decades following the abandonment of the gold standard in 1933, the consumer price index (CPI) in the United States nearly doubled. And, in the four decades after that, prices quintupled. Monetary policy unleashed from the constraint of domestic gold convertibility, had allowed a persistent overissuance of money. As recently as a decade ago, central bankers, having witnessed more than a half-century of chronic inflation, appeared to confirm that a fiat currency was inherently subject to excess.<sup>12</sup>

Adding to the problem of conducting sound monetary policy, some scholars have suggested that money influences not only the prices of consumer goods and wages, but also asset prices. They argue that money can work its mischief without showing up in consumer goods inflation. A stable price index of consumer goods would not be a good measure of the value of money.<sup>13</sup>

## Money and Prices

What price index should a central bank stabilize? Should it be consumer prices, a

broader measure of prices, nominal wages, or a measure including asset prices? The choice of an index will inevitably influence monetary policy. For instance, stabilizing wages would normally result in price *deflation* for consumer goods. There is no uniquely correct measure that corresponds to the theoretical concept of “price stability.”

Ludwig von Mises and Friedrich Hayek argued that stabilizing the prices of final goods would not in any case stabilize economic activity. Hayek argued that in a growing economy, the monetary policy that would stabilize a price index of consumer goods would interfere with the allocation of resources over time. It would do so by forcing interest rates below the level they would otherwise be. The price of long-lived assets, such as capital goods or housing, moves inversely to movements in the relevant interest rates. Lower interest rates translate into higher asset prices, and vice versa.<sup>14</sup>

An implication of the Mises-Hayek view is that stabilizing the prices of final goods and services will generate asset bubbles. The prices of long-lived assets can be artificially raised even though—because—the value of an appropriately chosen index of consumer goods is being stabilized (or there is zero measured price inflation).

Axel Leijonhufvud has recently presented a Wicksellian twist on the argument. “*The trouble with inflation targeting in present circumstances is that a constant inflation rate gives you absolutely no information about whether your monetary policy is right.*”<sup>15</sup> “Present circumstances” comprise a globalized economy with cheap imports and central-bank absorption of excess dollars into official reserves. Focused on the current inflation rate—employing a measure that underestimates that rate, to boot—the Fed believes its inflation targeting is working and inflation is “benign.”

Measuring asset-price inflation remains problematic. Charles Goodhart has argued, however, that at least one category of assets looms so large in consumer purchases that it cannot be ignored: housing. For him, finding a way to including housing prices in a price index of consumption is an imperative. In the

United States, the “rental equivalent” of housing is included in the CPI. But it cannot serve as a proxy for changes in the prices of future housing services. Neither conceptually nor empirically do changes in the prices of current consumption measure changes in prices of future consumption. If they did, there would be no need for futures markets.<sup>16</sup>

The use solely of current prices for housing and all other goods and services is inappropriate because changes frequently occur in preferences for future relative to current consumption. Ideally there would be prices of future consumption available for every good, but such is not the case. The inclusion of asset prices in an index serves as a proxy for these missing futures prices.

If asset prices are not incorporated into measures of inflation, their movements will not be action-forcing events for policymakers. Fed chairmen will wring their hands about “irrational exuberance” in such markets but be powerless to do anything until the effects of asset price changes are manifested in undesirable changes in *current* prices and output.<sup>17</sup>

If Fed officials wait for inflation in asset prices to translate into inflation in the prices of current output, they will have permitted not only a build-up of inflation forces but also resource misallocation everywhere. Hayek added a modern twist when he argued that what we now call “asset bubbles” can actually *raise* the Wicksellian natural rate of interest. That occurs because of capital complementarity. Already completed investments can accordingly raise the return to future investments.<sup>18</sup>

As expected profits increase, so, too, will credit demand. The natural rate rises as the bubble inflates. The central bank finds itself playing “catch up” and will often end up raising rates more than would have otherwise been the case. After the bubble has burst, the central bank’s aggressive moves will appear to have gone “too far.”<sup>19</sup>

That very much describes what happened when the subprime bubble finally burst. For more than a year before the bust, bankers and regulators knew they had a mess in the making. As John Makin aptly phrased it, the

lending practices in that market were “shoddy and absurd.”<sup>20</sup> But inflation was benign.

Likewise, the 1980s real-estate bust in Texas was widely expected in advance by some banking regulators and a few good bankers. Regulators did not act and markets did not constrain the risky behavior as theoretical models predict they should.<sup>21</sup>

These earlier bouts of moral hazard were the effects of deposit insurance and bank closure policies that insulated depositors and even other creditors from risk in the event of the failure of depository institutions. Ben Bernanke described the savings and loan crisis of the 1980s as “a situation . . . in which institutions can directly or indirectly take speculative positions using funds protected by the deposit insurance safety net—the classic ‘heads I win, tails you lose’ situation.”<sup>22</sup> After an intellectual and political battle of more than a decade, the deposit insurance loophole was sealed.<sup>23</sup>

## The Greenspan Doctrine

The new moral hazard in financial markets has its source in what can be best described as the Greenspan doctrine. The doctrine was clearly enunciated in a speech by then Fed chairman Alan Greenspan on December 19, 2002. Greenspan made an asymmetric argument leading to an asymmetric monetary policy. He argued that asset bubbles cannot be detected and monetary policy ought not in any case be used to offset them. The collapse of bubbles can be detected, however, and monetary policy ought to be used to offset the fallout.<sup>24</sup> That position came to be known as the Greenspan Put, an option to sell depreciated assets to the Fed.

Two months earlier, then-Fed governor Ben Bernanke had made a similar argument. Bernanke’s presentation was more academic in tone and perhaps more nuanced. Since Bernanke is now Fed chairman, it is reasonable for market participants to assume that the Greenspan doctrine still governs current Fed policy.

**Greenspan made an asymmetric argument leading to an asymmetric monetary policy.**

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The two Fed chairmen were surely asking and answering the wrong question. They were implicitly treating bubbles as solely the consequences of real shocks, such as technological innovation. They asked whether monetary policy should be used to offset the effects of real shocks and concluded that it should not. The latter is the correct answer to the question they each posed.

A different question would be to ask whether monetary policy should be conducted so as to create or exacerbate asset bubbles, which would not have occurred or would have been milder absent the assumed monetary policy. The answer to that question is surely “no.” Consider Bernanke’s apt characterization of moral hazard in the context of the deposit insurance crisis: “When this moral hazard is present, credit flows rapidly into inelastically supplied assets, such as real estate. Rapid appreciation is the result, until the inevitable albeit belated regulatory crackdown stops the flow of credit and leads to an asset-price crash.”<sup>25</sup>

Bernanke could have been talking about the subprime mortgage market. That bubble and collapse cannot be blamed on deposit insurance. First, deposit insurance is no longer systematically mispriced, and banking supervision has improved. Second, the majority of mortgages are no longer made by insured depository institutions. Yet something generated the moral hazard that enabled shoddy underwriting of subprime mortgages to persist for years.

The Greenspan doctrine made that possible, or at least facilitated it. The Fed has pre-announced that it will take no action against bubbles, but will act aggressively to offset the consequences of their collapse. In effect, the central bank is promising at least a partial bailout of bad investments—insurance with a deductible. In Greenspan’s own words: monetary policy should “mitigate the fallout [of an asset bubble] when it occurs and, hopefully, ease the transition to the next expansion.”<sup>26</sup>

In the present context, the “next expansion” could also be rendered as “the next asset bubble.” If the Fed promises to “mitigate the fallout” from “irrational exuberance,” then it

is rational for investors to believe that inherent risk is being at least partially insured against. Irrational exuberance becomes rational.

Brian Wesbury, chief economist at First Trust Advisors, has provided a useful graphic to depict the roller-coaster ride of monetary policy over 45 years (see Figure 1). He plotted the federal funds rate against the average annual growth rate in nominal GDP during the previous two years. The extreme volatility in the movement of rates and nominal GDP in the earlier period has been dampened. Fed policy continues to involve changing rates too often, creating the very volatility it seeks to dampen.<sup>27</sup>

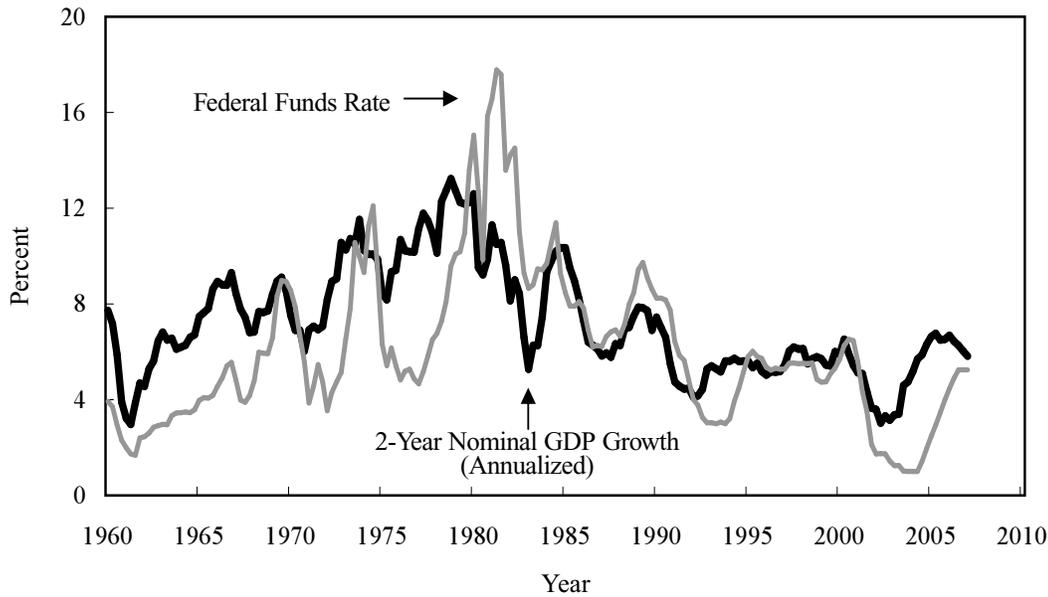
The Fed cut the federal funds rate sharply after the bursting of the stock market bubble in March 2000.<sup>28</sup> The Fed cut rates too far and held them down too long, fueling not only a vigorous economic expansion but also a housing bubble. In his December 2002 speech, Greenspan was at pains to deflect any argument that the Fed was inflating a housing bubble. “To be sure,” he acknowledged, mortgage debt was high relative to household income (remember the date) by historical norms. But “*low interest rates*” were keeping the servicing requirements of the mortgage debt manageable (emphasis added). “Moreover, owing to continued large gains in residential real estate values, equity in homes has continued to rise despite very large debt-financed extractions.”<sup>29</sup>

How wrong the Fed chairman was! If Alan Greenspan was not worried about interest rates resetting, however, why should mortgage bankers and homeowners worry? It would have been reasonable to read into the chairman’s musings an implicit guarantee of continued low rates. A homeowner is certainly entitled to bet his home on the come if he wants. It is questionable, however, whether the central bank should encourage such behavior.<sup>30</sup>

## **Monetary Policy for a Free Economy**

The Federal Reserve confronts a difficult if not intractable problem: providing a nominal anchor to a dynamic market economy.

**Figure 1**  
**U.S. Two-Year Nominal GDP Growth v. Federal Funds Rate**



Source: Bureau of Economic Analysis/Federal Reserve, [www.ftadvisors.com](http://www.ftadvisors.com).

Greenspan suggested at the beginning of his 2002 speech to the Economic Club of New York that the abandonment of the gold standard was a watershed event and a fiat currency is “inherently subject to excess.” He spoke disapprovingly of a policy that permits prices to nearly double in two decades. At current CPI inflation rates, however, prices will double in less than two decades.

Greenspan posed a policy dilemma: “Ironically, low inflation, economic stability, and low risk premiums may provide tinder for asset price speculation that could be sparked should technological innovations open up new opportunities for profitable investment.”<sup>31</sup> The dilemma can be recast to remove both irony and paradox.

In a vibrant market economy with technological innovation and ever new profit opportunities, the monetary policy that maintains price stability in consumer goods (or zero price inflation) requires substantial monetary stimulus. That stimulus will have a number of real consequences, including asset bubbles. These asset bubbles have real costs and involve misallocations of capital. For

example, by the peak of the tech and telecom boom in March 2000, too much capital had been invested in high-tech companies and too little in “old economy firms.” Too much fiber optic cable and too few miles of railroad track were laid.

By 2002, the Fed was worried about the possibility of price deflation. The experiences of Japan in the 1990s and the Great Depression were clearly weighing on the minds of policy-makers.<sup>32</sup> A tilt to stimulus was understandable at the time.

A continued bias against deflation will, however, produce a continued bias upward in price inflation. With the bursting of each asset bubble and the fear of deflationary pressure, Fed policy must ease. The inflation rate begins at the positive number. The Greenspan doctrine prescribes a simulative overkill that begins the cycle anew. Brian Wesbury’s chart for 45 years of Fed policy suggests that the Greenspan doctrine may only have formalized what was implicit. In any case, the Greenspan-era gains against inflation will then prove to be only temporary. His doctrine will be the death of his legacy.

**A continued bias against deflation will produce a continued bias upward in price inflation.**

**The failure of inflation targeting to maintain monetary and financial stability is becoming increasingly difficult to ignore.**

In their *Monetary History of the United States*, Friedman and Schwartz devoted considerable attention to the Greenback period, 1867–79. It was the only period in which two kinds of money circulated side-by-side at fluctuating exchange in the United States: gold and greenbacks. Additionally, the price level fell by roughly half and “at the same time, economic growth proceeded at a rapid rate.” As they noted, the period “casts serious doubts on the validity of the now widely held view that secular price deflation and rapid economic growth are incompatible.”<sup>33</sup>

Friedman and Schwartz clearly distinguished the difference between monetary contraction and (final goods) price deflation.<sup>34</sup> Modern discussions constantly conflate the two. Monetary contraction produces recession or depression, and great monetary contractions produce great depressions.<sup>35</sup>

Technological innovation and productivity growth will, unimpeded, generate secular deflation. If monetary policy tries to offset the deflation, confusing it as a sign of monetary tightness, it produces not only asset bubbles but also an inflationary bias. Unless the actual policy tradeoffs are understood, it will only be by accident that we will get something approaching the best possible monetary policy. Even conventionally defined price stability will be an elusive goal.

Current Fed policy has fallen short of producing either price stability or zero inflation. It shoots instead for a stable inflation rate.<sup>36</sup> It has failed to achieve even that task.

The failure of inflation targeting to maintain monetary and financial stability is becoming increasingly difficult to ignore. The high-tech and telecom boom and bust was accompanied by a stock market boom and bust, from which we have arguably not fully recovered. That was followed by the great housing boom and bust. All of this took place in approximately a decade. Analysts are already speculating on where the next bubble will inflate.

Many observers would implead financial liberalization in the policy indictment.<sup>37</sup> Financial folly has been a feature, however, of

both highly regulated and largely unregulated financial systems. The question is whether the central bank actively underwrites such folly.

We need not wait for all questions to be answered to put an end to the inflating, deflating, and reflating of asset bubbles. Martin Wolf has reached the correct conclusion when he called for central banks to “pay more attention to asset prices in the future. It may be impossible to identify bubbles with confidence in advance. But central bankers will be expected to exercise their judgment, both before and after the fact.”<sup>38</sup>

That change will move the Fed from the myth of monetary policy on autopilot and return the Fed to its old maxim of removing the punch bowl just when the fun begins. It will end a monetary policy that equates prosperity with a boom-and-bust economy and wreak financial mayhem on the public.<sup>39</sup> It is a policy that, if continued, will erode the case for free markets generally.

## Notes

The author gratefully acknowledges the comments of William Niskanen, James A. Dorn, and William T. Long on earlier drafts. A version of this paper was presented at the April 2008 meeting of the Association of Private Enterprise Education in Las Vegas.

1. Gerard Baker, reporting on the annual Federal Reserve conference on monetary policy in Jackson Hole, Wyoming, in the *Financial Times*, August 30, 1999; quoted in Charles Goodhart, “What Weight Should Be Given to Asset Prices in the Measurement of Inflation?” Netherlands Central Bank DNB Staff Report no. 65 (2001), p. 10. The quotation is a statement of “concerns” by unnamed observers.

2. The chronology of events draws from John H. Makin, “Risk and Return in Subprime Mortgages,” *Economic Outlook*, March 2007. On New Century’s bankruptcy, see “New Century Statement,” *Wall Street Journal Online*, April 2, 2007, <http://online.wsj.com/article/SB117552698051656885.html>.

3. Serena Ng and James R. Hagerty, “Mortgage-Bond Index Stokes Fears,” *Wall Street Journal Online*, February 27, 2007, <http://online.wsj.com/article/SB117253842321420060.html>.

4. These comprise pecuniary and nonpecuniary values. The latter include such disparate values as environmental, aesthetic, and religious values. Individuals need only be willing to commit resources to achieving those values to have them compete in markets against pecuniary goals.
5. Friedrich A. Hayek, "The Use of Knowledge in Society," in *Individualism and Economic Order* (Chicago: University of Chicago Press, 1948), pp. 86–87.
6. In the technical literature, this discussion is couched in terms of the neutrality of money. In that discussion, money is a mere *numeraire*, with no real impact on the economy. As Mises aptly observed, far from being the perfect money, neutral money "would not be money at all." Ludwig von Mises, *Human Action: A Treatise on Economics*, 3rd rev. ed. (Chicago: Henry Regnery, 1966), p. 418.
7. A government can deny a central bank control over the domestic money supply by pegging its currency to another one at a fixed change rate. If that policy were altered, the central bank could regain its control over the domestic money supply.
8. Strictly speaking, inflation must be unanticipated for market participants to be fooled. There is good reason, however, to believe that any nonzero rate of inflation is at least partially unanticipated. See Goodhart, p. 11. The argument is that of Axel Leijonhufvud.
9. Friedman's own output on money, and even more so the voluminous literature it spawned, is too large to cite. An early statement of his views appeared in Milton Friedman, *A Program for Monetary Stability* (New York: Fordham University Press, 1960). A number of his key monetary essays are collected in Milton Friedman, *The Optimum Quantity of Money and Other Essays* (Chicago: Aldine, 1969). See also Milton Friedman and Anna Jacobson Schwartz, *A Monetary History of the United States: 1867–1960* (Princeton, NJ: Princeton University Press for the National Bureau of Economic Research, 1963).
10. See Axel Leijonhufvud, "Monetary and Financial Stability," *Policy Insight* 14 (October 2007): 1.
11. For a time, Alan Greenspan preferred personal consumption expenditures, ex-food and energy, as an inflation measure. That measure has tended to converge with CPI-U, ex-food and energy.
12. "Remarks by Chairman Alan Greenspan," Before the Economic Club of New York, New York, December 19, 2002, p. 1.
13. Goodhart, p.3.
14. The classic statement of his position is in Friedrich A. Hayek, *Prices and Production*, 2d ed. (London: Routledge & Kegan Paul Ltd., 1935). See also Ludwig von Mises, *The Theory of Money and Credit*, trans. H. E. Batson (Irvington-on-Hudson, NY: The Foundation for Economic Education, 1971). For modern restatements of the position, see Gerald P. O'Driscoll Jr. and Mario J. Rizzo, *The Economics of Time and Ignorance* (Oxford and New York: Basil Blackwell, 1985); and Roger W. Garrison, *Time and Money: The Macroeconomics of Capital Structure* (London: Routledge, 2001).
15. Leijonhufvud, "Monetary and Financial Stability," p. 5. Emphasis in original.
16. Reference here would be to Mises, Hayek, Alchian, and Klein, and others too numerous to mention. Interestingly the list must include John Maynard Keynes, who grappled at length in his *Treatise on Money* with changes in the prices of current versus future consumption. His "Fundamental Equations" were meant to deal with the problem. His analysis was viewed as so flawed, however, that he abandoned the equations—but not the problem—in the *General Theory*. The result was the "Keynesian" macroeconomic model devoid of relative prices: "a model which showed no trace of the analytical problem that Keynes had wrestled with for a decade." Axel Leijonhufvud, *On Keynesian Economics and the Economics of Keynes* (New York, London, and Toronto: Oxford University Press, 1968), pp. 20–24 (quote from p. 24).
17. Goodhart, p. 10.
18. Friedrich A. Hayek, "Investment that Raises the Demand for Capital," *Review of Economic Statistics* 19, no. 4 (November 1937); reprinted in Hayek, *Profits, Interest and Investment* (New York: Augustus M. Kelley, 1970 [1939]), pp. 73–82.
19. As Leijonhufvud concludes about the most recent Fed tightening in "Monetary and Financial Stability," p. 5.
20. Makin, p. 2.
21. Frost Bank exemplified how a financial institution can survive a financial debacle if it adheres to sound banking practices. Tom Frost, then chairman and CEO, must be credited with ensuring that it did so by insisting, among other things, that real-estate loans must actually be collateralized. Fast forward to today and Makin's description of subprime loans: "Subprime mortgage" is a term used in financial markets to describe, euphemistically, mortgage loans that are largely uncollateralized and undocumented." Financial crises are most often old wine in new bottles.
22. "Remarks by Governor Ben S. Bernanke,"

- Before the New York Chapter of the National Association for Business Economics, New York, October 15, 2002, pp. 5–6.
23. For a semi-official assessment of the banking crises, see “The Banking Crises of the 1980s and Early 1990s: Summary and Implications,” *FDIC Banking Review* 11, no. 1 (1998). For assessments by protagonists in the debate, see, inter alia, Roger W. Garrison, Eugenie D. Short, and Gerald P. O’Driscoll Jr., “Financial Stability and FDIC Insurance,” in *The Financial Services Revolution: Policy Directions for the Future* (Boston: Kluwer Academic Publishers, 1987), ed. Catherine England and Thomas Huertas, pp. 187–207; Jeffery W. Gunther and Kenneth J. Robinson, “Moral Hazard and Texas Banking in the 1980s,” *Financial Industry Studies* (Federal Reserve Bank of Dallas, December 1990); Edward J. Kane, *The S&L Insurance Mess: How Did it Happen?* (Washington: Urban Institute Press, 1989); and Larry D. Wall, “Two-Big-to-Fail after FIDICIA,” *Economic Review* (Federal Reserve Bank of Atlanta, January/February 1993).
24. Greenspan, pp. 2–4.
25. Bernanke, p. 6.
26. Greenspan, p. 4.
27. See Brian S. Wesbury, “A U.S. Addiction to Easy Money,” *Journal of Commerce*, October 7, 1994.
28. Bernanke, p. 1.
29. Greenspan, p. 7. He even talked of “the post-bubble economy” in 2002.
30. For the human cost of the subprime collapse, see Mark Whitehouse, “‘Subprime’ Aftermath: Losing the Family Home,” *Wall Street Journal*, May 30, 2007, p. A1.
31. Greenspan, p. 3.
32. Greenspan, pp. 1–4, and Bernanke, pp. 7–9.
33. Friedman and Schwartz, p. 15.
34. To reiterate, price deflation does not imply falling money wages if productivity is increasing.
35. Friedman and Schwartz, pp. 299–419.
36. Ben S. Bernanke, “Monetary Policy under Uncertainty,” Speech presented at the 32nd Annual Economic Policy Conference, Federal Reserve Bank of St. Louis (via videoconference), p. 4.
37. Leijonhufvud is a recent example.
38. Martin Wolf, “Financial Globalisation, Growth and Asset Prices,” p. 11. The paper was prepared for the *Colloque International de la Banque de France* on “Globalisation, Inflation and Monetary Policy,” Paris, March 7, 2008.
39. *Ibid.*, p. 12.

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