

PREVENTING BUBBLES: WHAT ROLE FOR FINANCIAL REGULATION?

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It is now quite clear that the U.S. economy went through a massive housing bubble, starting in the late 1990s and lasting through mid 2006. The inflating of that bubble was encouraged, to a considerable extent, by the expansion and especially the securitization of residential mortgage finance. The housing bubble, in turn, reinforced that mortgage expansion and securitization.

The deflating of the housing bubble has had severe negative consequences: first, for the U.S. financial sector (which had both created and invested in the mortgage securitization instruments) and, subsequently, for the overall U.S. economy. Given these severe consequences, it is surely no surprise that there have been calls for policymakers to prevent future asset price bubbles—through the better exercise of monetary policy and financial regulatory policy.

This article focuses on financial regulation and argues that the use of financial regulation to try to prevent bubbles is a mistake—a fool’s errand. Bubbles are easy to identify after the fact but much harder (or impossible) to identify beforehand. In the absence of (the near impossible) success in correctly identifying bubbles beforehand, efforts to address bubbles beforehand run the severe risk of squelching efficient and productive price changes—the false positives—as well as squelching the speculative and ultimately wasteful price changes of a bubble. However, what financial

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regulation—specifically, prudential regulation—can do is to ameliorate the consequences of a bursting bubble for the financial sector.¹

The article is organized along the following lines: I begin by discussing bubbles and why efforts to try to address them directly through financial regulation (or, indeed, through any public policy) are unwise. Next, I contrast the consequences of the bursting of two recent bubbles—the U.S. tech stock market bubble of the late 1990s and the housing bubble of the 2000s—and argue that the latter's bursting was far more devastating because too many of the consequences fell directly on the thinly capitalized, highly leveraged financial sector that could ill afford the losses that the bursting created. Finally, I turn to the case for prudential regulation of financial institutions and then offer a brief conclusion.

Bubbles

After the fact, bubbles are always easy to identify: For a specific asset class, asset prices went up; subsequently they went back down. Therefore, this asset class experienced a bubble.

The U.S. housing bubble of the 2000s is only the most recent asset bubble.² Earlier bubbles of the past few decades include the U.S. tech stock market bubble of the late 1990s, the Japanese real estate and stock market bubbles of the 1980s, and the gold market bubble of the 1970s.

Of course, the history of asset bubbles' expanding and collapsing stretches far longer. That history encompasses the U.S. stock market expansion of the 1920s and subsequent collapse in the early 1930s, Florida land speculation of the 1920s, periodic U.S. railroad speculative bubbles of the late 19th century, the French (John Law) Mississippi land and British South Sea bubbles of the early 18th century, and the Dutch tulip mania bubble of the early 17th century. Economic and financial historians could surely expand considerably upon this list.³

¹In this respect, the general argument parallels that found in Mishkin (2008); see also Malkiel (2010).

²It is worth noting that the United States was not alone in experiencing a housing bubble: England, Ireland, and Spain experienced housing bubbles of roughly similar magnitudes.

³Indeed, Reinhart and Rogoff (2009) provide evidence on "eight centuries of financial folly."

However, the definitive identification of a bubble is always an after-the-fact event. During the period of the asset price increase, there will always be a diversity of opinion, including skeptics as well as enthusiasts—after all, someone must be selling at the time that the enthusiasts are buying—but during the period of the price increase the sentiment of the enthusiasts outweighs that of the skeptics. But this is no different from a period of an asset price increase that is based on what afterward turns out to be a solid foundation—for example, the rise in importance of the telegraph in the middle of the 19th century, the rise of the importance of the telephone in the late 19th and early 20th centuries, the rise of the automobile in the first half of the 20th century, the rise of radio broadcasting in the early 20th century, and the rise of television broadcasting in the middle of the 20th century. Enthusiasts promoted these trends; skeptics expressed doubt.

In each of these instances there will be asset price rises that are associated with these trends—whether it is the share prices of the companies that are at the center of these trends or land prices of geographic areas that are proximate to these trends. Any beforehand attention to these bubbles by public policy—in essence, paying greater attention to the skeptics—would risk squelching efficient allocations of resources. Further, in some instances there may be a longer-run expansion and then deflation of the asset prices (e.g., General Motors stock or Detroit land prices). Should these types of longer-run asset price inflations and subsequent deflations also be included as bubbles that warrant public policy attention?

As this brief review highlights, any discussion about bubbles is really a discussion about the efficiency of financial markets. Again, after the fact, it is easy to identify bubbles and thereby to conclude that the financial markets had been mistaken during the period of the asset price run-up. However, it is a large leap from this after-the-fact conclusion to a real-time determination that the financial markets are currently mistaken in the valuation of a specific category of asset. The proper action for anyone who has this belief is to find an opportunity to sell the asset short—not to try to convince policymakers that intervention is warranted.

Further, it is an equally large leap from the after-the-fact conclusions that there have been asset bubbles to the public policy determination that financial markets are generally inefficient and

therefore warrant widespread intervention to ward off asset bubbles (as well as other ills of inefficient markets). To make this leap would mean that policymakers should be giving excessive weight—more than the financial markets give—to the skeptics (bears); and it is far from clear why policymakers should have superior knowledge as compared to the collective sentiment of the financial markets at such times. Instead, the proper action for policymakers is to focus on areas where market failures are large and pervasive (and are not likely to be swamped by the problems of government failures) rather than heeding the skeptics and those who believe that the financial markets are pervasively inefficient.⁴

Different Consequences from Different Asset Bubble Deflations

To express skepticism about public policy's ability accurately to spot asset bubbles in advance, is not to deny that there can be serious consequences from the eventual deflation of an asset bubble. The severity of those consequences can be related to the extent of the involvement of crucial parts of the financial sector. A comparison of the consequences of the deflating of the tech bubble of the late 1990s and the deflating of the housing bubble of the 2000s illustrates this differential severity.

The Bursting of the Tech Bubble

Between year-end 1999 and year-end 2002, the bursting of the tech bubble of the late 1990s led to approximately \$7 trillion in aggregate U.S. stock market losses.⁵ This massive loss of wealth had serious consequences for the U.S. economy. The economy slowed and entered a recession in March 2001, hitting a trough in November 2001. The unemployment rate rose from 3.9 percent in October 2000 and peaked at 6.3 percent in June 2003.

However, the recession was considered to be relatively shallow by recent standards. In essence, the loss of wealth was absorbed, the economy slowed and dipped, and then the economy moved on.

⁴On issues of market failure versus government failure, see White (1997) and, more generally, Wolf (1989).

⁵The figures are from the Federal Reserve's Flow of Funds data base.

The Bursting of the Housing Bubble

According to the Case-Shiller index of residential housing prices, U.S. housing prices hit a peak in June 2006. At the time, U.S. single-family housing in aggregate was valued at approximately \$19.4 trillion.⁶ As of this writing, housing prices have fallen about 30 percent from their peak, and it is still unclear as to whether they have reached their trough. If the final fall comes to 35 percent, this will represent a loss in value of \$6.8 trillion in housing wealth—a sum that is quite similar to the loss of wealth from the bursting of the tech bubble.

The effects on the U.S. economy of the bursting of the housing bubble have been considerably more severe. There was a collateral slide in the U.S. stock market that generated an additional \$12.7 trillion in loss in aggregate stock market value between the end of the third quarter of 2007 and the end of the first quarter of 2009.⁷ The U.S. economy entered a recession in December 2007 and emerged in August 2009. Unemployment in the United States rose from a low of 4.5 percent in May 2007 to a peak of 10.1 percent in October 2009, and was still 9.4 percent at year-end 2010.

The U.S. economy had entered “the Great Recession,” which (depending on whether the depth or the length of the recession is being measured) was either the worst recession since the early 1980s, or the worst recession since the 1930s. Under either characterization, the consequences of the bursting of the housing bubble were far more severe than the effects of the bursting of the tech bubble.

Why the Difference?

Why were the severities of the consequences of these two recent asset bubble deflations so different? A straightforward answer can be provided by examining who was holding the assets that shrunk in value.

In the case of the deflating of the tech bubble, the stock market losses were mostly absorbed directly by households: through their direct holdings of equities, through their holdings of equities-based mutual funds, and through their pension funds’ holdings of equities.

⁶Again, these data are from the Federal Reserve’s Flow of Funds data base.

⁷The decline in the U.S. stock market likely also reflected fears about the health of the world economy more broadly, as well as fears about the effects of the housing bust on the U.S. economy.

In essence, these were unleveraged holdings of the equities: the losses were borne, households were poorer and adjusted their spending, there were macroeconomic consequences, and the economy moved on.

In the case of the deflating of the housing bubble, households again have been the first-absorbers of the losses. And, again, by causing home-owning households to be poorer, the housing bust would cause these households to adjust their spending downward, with consequent macroeconomic effects. Thus far, the effects should have been similar.

However, to the extent that the losses in housing (and the consequent downturn in the economy) caused households to default on their mortgages, some of those losses have been transferred to the financial sector. Consequently, the financial institutions that held the residential mortgages, and the mortgage-backed securities for which the mortgages were the underlying collateral, experienced the losses. Mark Zandi, in his testimony before the House Financial Services Committee in July 2009, estimated aggregate losses borne by the financial sector at about \$1.3 trillion, with about \$550 billion borne by banks and \$205 billion borne by insurance companies (Zandi 2009). Fannie Mae and Freddie Mac, which are government sponsored enterprises (GSEs), have (as of early 2011) absorbed losses of around \$220 billion and may well absorb an additional \$100–\$200 billion of losses by the time the full accounting of the housing debacle has settled.⁸ Thus, over \$1 trillion of the housing value losses have been transferred from defaulting households to these specific categories of financial institution.⁹

I have singled out these categories because these financial institutions are highly leveraged: they have relatively small amounts of equity on their balance sheets relative to the size of their debt obligations. Accordingly, in a legal system of limited liability for equity holders, even modest (in percentage terms) losses by highly leveraged financial institutions can generate prospective losses for

⁸As of year-end 2007, Fannie and Freddie had a joint net worth of about \$70 billion. Subsequently, their losses have wiped out that entire net worth, and the two giant GSEs have required (thus far) capital contributions from the U.S. Treasury of about \$150 billion.

⁹Zandi (2009) also estimates losses to pension funds, mutual funds, and hedge funds as totaling \$163 billion. The first two categories are usually not leveraged at all or (for most hedge funds) usually not highly leveraged.

the debt holders. Fears of such losses can lead to runs by the debt holders, who hope to get 100 cents on the dollar if they demand repayment (withdraw their funds) before other claimants try to do the same. Moreover, the perceptions of runs at one financial institution may raise similar fears by imperfectly informed creditors at other (similar) financial institutions and thereby start a cascade or contagion of runs.¹⁰

Prior to 2008, such runs were thought to be largely or wholly the problem of depository institutions, which the creation of federal deposit insurance in 1933 had largely solved. In 2008, however, the financial sector—and then policymakers—came to the realization that runs could occur on large, thinly capitalized investment banks and bank holding companies that were financed with short-term obligations and that had made investments of increasingly uncertain value in residential mortgages and mortgage-backed securities. Table 1 illustrates the sizes and categories of the 15 largest financial institutions at the end of 2007 and their (thin) levels of net worth or owners' equity. It is worth recalling that, in the context of financial institutions, their "capital" is (as a first approximation) their net worth or equity, and that leverage is the ratio of assets to equity (see White 2009a). To take an example from Table 1, Bear Stearns at the end of 2007 had capital that was only 3 percent of its assets, and (equivalently) its leverage ratio was 33⅓-to-1.

Consequently, having even \$1 trillion of the (roughly) \$7 trillion in housing losses spill into the highly leveraged domain of commercial banks, investment banks, GSEs, and (to a more limited extent) insurance companies was devastating to those parts of the financial sector (see Greenspan 2010 and Swagel 2009). The largest 15 financial institutions in the United States that are portrayed in Table 1, with an aggregate of \$15.5 trillion in assets, had an aggregate of only \$0.9 trillion in capital. The entire U.S. depository system (of which the largest five members are represented in Table 1) at year-end 2007 had \$13 trillion in assets and only \$1.3 trillion in capital.¹¹

The uncertainties as to which financial institutions were still solvent—that is, had assets with a true market value that exceeded

¹⁰More formal discussions of runs can be found in Diamond and Dybvig (1983), Postlewaite and Vives (1987), and Chen (1999).

¹¹These data are from FDIC reports.

TABLE 1
LARGEST U.S. FINANCIAL INSTITUTIONS BY ASSET SIZE
(DECEMBER 31, 2007)

Rank	Financial Institution	Category	Assets (\$ billion)	Equity as a % of Assets
1	Citigroup	Commercial bank	2,182	5.2
2	Bank of America	Commercial bank	1,716	8.6
3	JPMorgan Chase	Commercial bank	1,562	7.9
4	Goldman Sachs	Investment bank	1,120	3.8
5	American International Group	Insurance conglomerate	1,061	9.0
6	Morgan Stanley	Investment bank	1,045	3.0
7	Merrill Lynch	Investment bank	1,020	3.1
8	Fannie Mae	GSE	883	5.0
9	Freddie Mac	GSE	794	3.4
10	Wachovia	Commercial bank	783	9.8
11	Lehman Brothers	Investment bank	691	3.3
12	Wells Fargo	Commercial bank	575	8.3
13	MetLife	Insurance	559	6.3
14	Prudential	Insurance	486	4.8
15	Bear Stearns	Investment bank	395	3.0

NOTES: The Federal Home Loan Bank System (\$1,272B in 2007) and TIAA-CREF (\$420B in 2007) have been excluded from this list.

If GE Capital were a stand-alone finance company, its asset size (\$650B in 2007) would place it 12th.

SOURCES: *Fortune 500* (5 May 2008), and Federal Housing Finance Agency (for Fannie Mae and Freddie Mac).

the value of their liabilities; or equivalently, had positive capital—expanded across the financial system, starting in the summer of 2007 and engulfed the financial system by the late summer of 2008. These uncertainties meant that creditors to these financial institutions (often other financial institutions in the United States or overseas) were increasingly reluctant to lend to each other. Insolvency fears morphed into liquidity pressures, and liquidity pressures, which caused some institutions to sell some assets at fire-sale prices, in turn exacerbated insolvency fears.

As of the summer of 2008, depositors in commercial banks and thrift institutions were protected by deposit insurance, but only amounts up to \$100,000 were covered. Any household or business with deposit amounts greater than \$100,000 would have to worry as to whether their bank was solvent. Further, larger banks financed themselves with other kinds of short-term borrowings that were not insured. All of investment banks' liabilities were uninsured. And the GSEs' liabilities were nominally uninsured as well, although the financial markets had always treated them as though they had an implicit guarantee—even though that guarantee had never been put to the test.

With uncertainties and fears of insolvencies rampant in the latter half of 2008 and persisting into early 2009, the financial system froze. One manifestation of that freezing was the widening spread between the three-month Libor (the interest rate at which banks lend among themselves) and the three-month Treasury bill yield (Zandi 2009: 11). In turn, the freezing of the financial system exacerbated the stock market decline and the macroeconomic slowdown that would have accompanied the bursting of the housing bubble in any event.

In sum, having more than \$1 trillion of housing asset losses spill into the thinly capitalized financial sector greatly exacerbated the consequences of the deflating of the housing bubble. One important lesson from this, then, is that greater efforts must be made to make financial institutions less susceptible to the deflation of asset bubbles. That means enhanced prudential regulation, to which we now turn.

Prudential Regulation

Prudential regulation—the regulatory effort to maintain the solvency of financial institutions—has been applied to banks and other depository institutions, bank holding companies, insurance companies, money market mutual funds, defined-benefit (traditional) pension funds, and broker-dealers. For the purposes of simplicity, I shall focus on depository institutions, which I shall refer to as “banks.”¹²

The Arguments for Prudential Regulation

The arguments for the prudential regulation of banks start with the limited liability protections for the owners of corporations and

¹²This section draws heavily on White (2011).

the consequent asymmetry of the gains and losses for the owners of a leveraged corporation (i.e., a corporation that is carrying a significant amount of debt on its balance sheet). It's clear that creditors to a corporation need to be protected against the risk-taking incentives of the corporation's owners. For nonfinancial corporations, the creditors (e.g., bond holders and lending banks) are expected to protect themselves through covenants in bond indentures, restrictions in lending agreements, and other safeguards. But for banks the creditors are primarily the depositors, who are seen as unable to protect themselves adequately. Hence, there is a longstanding tradition in the United States extending back at least to the 1860s of having government prudential regulation as the substitute protector for the depositors.¹³

There are several arguments for government prudential regulation of banks (instead of relying on depositors to protect themselves through covenants or other negotiated restrictions):

1. Banks are complex and difficult to understand—except (hopefully) by experts—even under the best of circumstances (see Morgan 2002).
2. Depositors (even commercial depositors) tend to be relatively unsophisticated with respect to understanding the activities and finances of banks.
3. The primary liabilities that banks issue tend to be short-term demand deposits, which the depositors expect to be liquid and available at short notice at par (i.e., they do not expect to bear losses); equivalently, there ought to be a safe place that relatively unsophisticated individuals (and businesses) can keep their money (and savings), as an alternative to cash that is stored in cookie jars or under mattresses.¹⁴
4. Typically, there are large numbers of depositors in a bank, and the amounts of their deposits vary over time. Coordination

¹³The National Currency Act of 1863 and the National Bank Act of 1864 created a national charter for banks and a national prudential regulator—the Comptroller of the Currency—to regulate them. Even before then, the states as charterers of banks saw banks as special and restricted their activities. Further, where states had created state-backed systems of deposit insurance (New York was the first to do so, in 1829), they realized that they needed a system of regulation to try to contain the activities of banks that could put the deposit insurance system at risk.

¹⁴This last version is really an argument for deposit insurance, but then the deposit insurer would want a system of prudential regulation to protect itself.

among them, so as to agree on a set of covenants to impose on their bank—and to agree on who should do the necessary monitoring—would be far more difficult than is the case for bond covenants (where there is typically a trustee, as well as a few dominant block holders of the bonds that have been issued by any company) or bank loans to nonfinancial corporations (where there is typically a single bank or a consortium of a few banks).

5. Because of the foregoing factors, banks are susceptible to runs. If some depositors are unsure about the value of the bank's assets but are worried that the assets may be inadequate to satisfy all depositors' claims, those depositors may want to withdraw their funds before other depositors get the same idea. Other depositors, seeing or hearing about the first group's actions, may similarly rush to withdraw their funds. This general run on deposits can be exacerbated by the realization that even a solvent bank is relatively illiquid, in the sense that it has loaned out almost all of its depositors' funds and keeps only a small amount of cash on hand to deal with normal withdrawals. Moreover, if depositors in nearby banks see the run on the first bank, they fear that the same problems may apply to their banks. Thus, a contagion or cascade of bank runs can develop.¹⁵
6. Since a bank that is subject to a run by its depositors cannot satisfy all of their demands for cash withdrawals, the bank must either close (declare bankruptcy or its equivalent) or suspend payment until it can liquidate its assets.¹⁶ Either of these outcomes would be unsatisfactory to depositors, which can serve to heighten fears and exacerbate runs.
7. The closure of a bank because of insolvency will impose losses on relatively unsophisticated depositors. These losses may be considered to be unacceptable politically (as well as exacerbating the depositor nervousness that leads to runs).
8. The closure of a bank and the liquidation of its assets—which will mean the calling in (i.e., requiring repayment) of its loans—may deprive local households and businesses of a significant

¹⁵As became clear in September 2008, similar runs were possible by the short-term creditors to the thinly capitalized large U.S. investment banks.

¹⁶Even for a solvent bank, the forced liquidation of its assets would likely yield losses and render it insolvent, generating losses for even the patient depositors.

source of credit. Even if there are alternative lending sources, the specialized knowledge that the bank has developed as to who is a creditworthy borrower (and who is not) may be lost, to the detriment of those creditworthy borrowers (who, at a minimum, will have to demonstrate their creditworthiness to another potential lender).¹⁷

The roles of a prudential regulator, a central bank, and deposit insurance in maintaining a stable banking system can now be seen. Prudential regulation is intended to prevent the bank from becoming insolvent and thereby prevent depositors from being exposed to losses.¹⁸ The central bank can lend (provide liquidity) to an otherwise illiquid but solvent bank, to help the bank deal with any temporary nervousness that might develop among its depositors.¹⁹ And deposit insurance provides a backup reinsurance to depositors and thus serves as an additional backstop against bank runs, in the event that prudential regulation has failed to prevent the bank's insolvency.²⁰

The Primary Tools of Prudential Regulation

There are a number of ways to carry out prudential regulation. A brief summary follows:

1. *Capital Adequacy.* Since the goal of prudential regulation is to maintain the solvency of banks (i.e., to ensure that they have positive levels of capital), minimum capital levels relative to the risks that are undertaken by the bank are at the heart of any system of prudential regulation.²¹ Equivalently, this means limits on leverage.

For all financial institutions, capital levels are so thin that accurate measurements of the value of the institution's assets—and thus of its

¹⁷For example, Bernanke (1983) demonstrated that this was one of the major costs of the thousands of bank closures that accompanied the U.S. economy's descent into the Great Depression of the 1930s.

¹⁸For a skeptical view as to the efficacy of prudential regulation, especially outside of the U.S. context, see Barth, Caprio, and Levine (2006).

¹⁹Of course, in lending to the bank, the central bank becomes a creditor to the bank. At a minimum the central bank will want adequate collateral for its loan, and, more generally, it will want to assure itself of the solvency of the bank to which it is lending.

²⁰For general arguments along these lines, see White (1991).

²¹Included in capital should be a slice of subordinated debt and/or debt that converts to equity (contingent capital) when capital levels decline.

capital (because capital is determined by simple subtraction)—are crucial. An accounting system that relies primarily on market values for the determination of asset values (with some allowance for the vagaries of thin markets), rather than on historical costs or on projected cash flows, is essential.

As a bank's capital buffer gets thinner, prudential regulators should progressively restrict its activities. At the limit of insolvency, the regulator must declare a receivership and take full control of the bank. This system of progressive restrictions has come to be called "prompt corrective action."

2. *Activities Limitations*. In principle, if prudential regulators could accurately ascertain the risks of all potential activities by a bank—including nonfinancial activities, such as owning and operating an automobile manufacturing facility, or a large department store—and could thereby assign the appropriate capital levels, then there would be no need for any restrictions on the activities of banks. More realistically, prudential regulators will be limited in their ability to ascertain the riskiness of most nonfinancial activities—and perhaps even of some financial activities. If prudential regulators cannot ascertain the riskiness of an activity, that activity ought not to be permitted for a bank.²²

3. *Managerial Competency Requirements*. The failure of a bank (even a small, local bank) is clearly a more serious event than the failure of a corner delicatessen. Requiring that the senior managers of a bank demonstrate their competency at running a bank naturally follows.²³

4. *Close Monitoring of the Financial Flows between a Bank and Its Owners*. Because it is too easy to loot a bank—that is, to extract assets from the bank in a way that benefits the owners (such as excessive dividends and favorable loans to the owners) but leaves the liability holders at risk—prudential regulators must closely monitor the financial flows between a bank and its owners (or their families and friends).

5. *Adequate Numbers of Well-Trained and Well-Paid Regulators*. Because prudential regulation involves sophisticated monitoring of

²²However, that activity may well be appropriate for a nonfinancial holding company of a bank. See White (2009b) for a general argument along these lines.

²³U.S. bank regulators require such competency on the part of the senior management for start-up (denovo) banks. And it remains an occasionally used tool for personnel removal at more seasoned banks.

sophisticated financial institutions, adequate numbers of well-trained and well-paid personnel to conduct this monitoring are essential.

6. *A Receivership Regime for Insolvent Banks.* Once a bank reaches insolvency, it must be placed in a receivership (usually operated by the regulator or the deposit insurer). The receivership extinguishes the rights of the owners and usually dismisses the senior management who “drove the bank into the ditch.” The regulator can then decide whether the best course of action is to liquidate the bank or to find an acquirer.²⁴

The Wider Application of Prudential Regulation

Although the prudential regime just described applies specifically to banks, its justifications and principles should apply to any large financial institution where the society-wide consequences of its insolvency would be significant. This was certainly the case at year-end 2007 (see Table 1):

- Five large investment banks alone accounted for over \$4 trillion in assets, with only 3–4 percent capital and highly runable liabilities (with no effective prudential regulatory regime, no guarantees for the liabilities, and no access to the Federal Reserve for liquidity purposes).
- Fannie Mae and Freddie Mac together had \$1.7 trillion in assets and another \$3.5 trillion in outstanding mortgage-backed securities that they had guaranteed, with only 4–5 percent capital (with a weak prudential regulatory regime, the uncertain implicit guarantee of their liabilities because they were GSEs, and no access to the Fed).
- The holding company of Citigroup was effectively another investment bank with \$0.9 trillion in assets (on top of a \$1.3 trillion commercial bank), with low capital and runable liabilities (and a weak prudential regime by the Fed and no insurance for the liabilities).

²⁴The operation of a receivership is best envisioned as operating in conjunction with the deposit insurer. The deposit insurer pays off the insured depositors and then must deal with its consequent loss—the negative net worth hole of the insolvent bank. The receiver tries to find the best route to maximizing the value of the remaining assets and thus minimizing the size of the deposit insurer’s loss.

- The holding company of AIG had written hundreds of billions of credit default swaps (in essence, insurance policies) on residential mortgage-backed securities but had set aside no capital to cover possible losses on those transactions (with weak prudential oversight by the Office of Thrift Supervision).

Had more effective prudential regulation been in place at the time, the consequences of the collapse of the housing bubble surely would have been far milder. As a collateral benefit, more effective prudential regulation would likely have moderated the inflation of the bubble in the first place, since these financial institutions would have been less leveraged and thereby less able to invest in the residential mortgages and the mortgage-backed securities that helped inflate the bubble.

Arguably, the financial world is different today. Only four of the five large U.S. investment banks have survived, and they are each now parts of bank holding companies. Fannie Mae and Freddie Mac are in government conservatorships and are unlikely to emerge in any form that is similar to their previous GSE status. AIG has been under the supervision of the Federal Reserve since the fall of 2008 and will surely be treated as a bank holding company going forward.

The Dodd-Frank Act of 2010 created a Financial Stability Oversight Council, with an obligation to identify large financial institutions that are *systemically* important but not covered by a prudential regulatory regime; any such identified institution would be subject to prudential regulation by the Federal Reserve. GE Capital would appear to be the major candidate.

The prudential regulatory domain of the Federal Reserve has been considerably widened since the end of 2007. One can only hope that they have truly learned the importance of effective prudential regulation of bank holding companies.

Conclusion

Public policy efforts to prevent asset price bubbles beforehand are a fool's errand—or worse. At best, they will fail; at worst, they will also discourage efficient and productive asset price changes. Nevertheless, the heightened policy concerns about the consequences of the collapse of the U.S. housing bubble are well founded. Those consequences were far more severe than they needed to be.

Understanding the reasons for that exacerbated severity—that enough of the losses spilled into the highly leveraged portions of the financial sector to cause widespread fears of insolvency and illiquidity, with the consequent freezing of the functioning of the sector—is crucial for sensible policy going forward. At the center of such sensible policy must be a strengthened system of prudential regulation of the kinds of financial institutions that created the extreme difficulties of 2007–09.

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