

## Preventing Bubbles: What Role for Financial Regulation?

Lawrence J. White\*  
Stern School of Business  
New York University  
[Lwhite@stern.nyu.edu](mailto:Lwhite@stern.nyu.edu)

### Abstract

In the wake of the U.S. housing bubble and collapse and the consequent financial collapse of 2007-2009 and its severe consequences for the U.S. economy, it is unsurprising that there have been calls for policy makers to prevent future asset price bubbles – through the better exercise of monetary policy and/or financial regulatory policy. This essay focuses on financial regulation and argues that such efforts would, at best, be ineffective and, at worst, could squelch productive and efficient asset pricing. Instead, policy makers should focus on better regulatory efforts – better prudential regulation – to ameliorate the consequences of asset bubble deflations on the financial sector.

Key words: Asset price bubbles; prudential regulation; capital; leverage

JEL codes: G21, G28

---

\* This paper is a modified version of a presentation at the Cato Institute's Annual Monetary Conference in Washington, DC, November 18, 2010.

## Preventing Bubbles: What Role for Financial Regulation?

*“The shapers of the American mortgage finance system hoped to achieve the security of government ownership, the integrity of local banking and the ingenuity of Wall Street. Instead they got the ingenuity of government, the security of local banking and the integrity of Wall Street.”*

- David Frum (columnist, and former speechwriter for President George W. Bush), *National Post*, July 11, 2008

### I. Introduction

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 policy makers to prevent future asset price bubbles – through the better exercise of monetary policy and/or financial regulatory policy.

This essay will focus on financial regulation. We will argue 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 regulation – specifically, prudential regulation – can do is to ameliorate the consequences of a bursting bubble for the financial sector.<sup>1</sup>

This essay will expand on these ideas: Section II discusses bubbles and why efforts to try to address them directly through financial regulation – or, indeed, through any public policy – are unwise. Section III offers a brief contrast of 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 draws the conclusion that the latter’s bursting was far more devastating because too much of the consequences fell directly on the thinly capitalized/highly leveraged financial sector that could ill afford the losses that the bursting created. Section IV then focuses on prudential regulation of financial institutions and its important features. Section V offers a brief conclusion.

---

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

## II. 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.<sup>2</sup> Earlier bubbles of the past few decades include:

- The U.S. “tech” stock market bubble of the late 1990s;
- The Japanese real estate bubble of the 1980s;
- The Japanese stock market 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 nineteenth century; the French (John Law) Mississippi land and British South Sea bubbles of the early eighteenth century; and the Dutch tulip mania bubble of the early seventeenth century. Economic and financial historians could surely expand considerably upon this list.<sup>3</sup>

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: e.g., the rise in

---

<sup>2</sup> It is worth noting that the U.S. was not alone in experiencing a housing bubble. The U.K., Ireland, and Spain experienced housing bubbles of roughly similar magnitudes to that of the U.S.

<sup>3</sup> Indeed, Reinhart and Rogoff (2009) provide evidence on “eight centuries of financial folly”.

importance of the telegraph in the middle of the nineteenth century, the rise of the importance of the telephone in the late nineteenth and early twentieth centuries, the rise of the automobile in the first half of the twentieth century, the rise of radio broadcasting in the early twentieth century and then the rise of television broadcasting in the middle of the twentieth century, etc. Enthusiasts promoted these trends; skeptics expressed doubt.<sup>4</sup>

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 (e.g., Detroit for automobiles). 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 policy makers that intervention is warranted.

---

<sup>4</sup> Of course, there have also been instances – e.g., personal jet-packs, picture telephones, helicopters’ replacing automobiles, etc. – where the skeptics of new technologies have been correct.

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 policy makers should be giving excessive weight – more than the financial markets give – to the skeptics (bears); and it is far from clear why policy makers should have superior knowledge as compared to the collective sentiment of the financial markets at such times. Instead, the proper action for policy makers 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/or those who believe that the financial markets are pervasively inefficient.<sup>5</sup>

As of early 2011, gold as an asset class has experienced a ten-year run up in prices. Is this a bubble?

---

<sup>5</sup> On issues of market failure versus government failure, see White (1997) and, more generally, Wolf (1989).

### III. Different Consequences from Different Asset Bubble Deflations

To express skepticism about public policy's ability accurately to spot asset bubbles in advance, as was done in the previous section, 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.

#### A. 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.<sup>6</sup> 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% in October 2000 and peaked at 6.3% 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.

#### B. 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.<sup>7</sup> As of this writing, housing prices have fallen about 30% from their peak, and it is still unclear as to whether they have reached their trough. If the final fall

---

<sup>6</sup> The figures are from the Federal Reserve's "Flow of Funds" data base.

<sup>7</sup> Again, these data are from the Federal Reserve's "Flow of Funds" data base.

comes to 35%, 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.<sup>8</sup> The U.S. economy entered a recession in December 2007 and emerged in August 2009. Unemployment in the U.S. rose from a low of 4.5% in May 2007 to a peak of 10.1% in October 2009; as of December 2010 the U.S. unemployment rate was still at 9.4%.

The U.S. economy had entered “the Great Recession” – which (depending on the whether the length or depth 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.

### C. 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. In essence, these were unleveraged holdings of the equities. The losses were borne; the households

---

<sup>8</sup> The 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.



were poorer; they 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/or the consequent downturn in the economy) caused households to default on their mortgages, some of these losses have been transferred to the financial sector; as a consequence, the financial institutions that held the residential mortgages and/or held the mortgage-backed securities for which the mortgages were the underlying collateral experienced the losses. One estimate (as of July 2009) puts those 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.<sup>9</sup> Fannie Mae and Freddie Mac (which are “government sponsored enterprises, or GSEs) have (as of early 2011) absorbed losses of around \$220 billion<sup>10</sup> and may well absorb an additional \$100-\$200 billion of losses by the time that the full accounting of the housing debacle has settled. Thus, over \$1 trillion of the housing value losses have been transferred from defaulting households to these specific categories of financial institution.<sup>11</sup>

Why have I 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

---

<sup>9</sup> See Zandi (2009).

<sup>10</sup> As of year-end 2007 they together had an aggregate of about \$70 billion of net worth. Subsequently, their losses have wiped out that entire net worth plus required (thus far) capital contributions from the U.S. Treasury of about \$150 billion.

<sup>11</sup> Zandi (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.

sizes 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 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; and 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.<sup>12</sup>

Prior to 2008, such runs were thought to be largely or wholly the problem of depository institutions (see the discussion in Section IV below), which the creation of federal deposit insurance in 1933 had largely solved. In 2008, however, the financial sector – and then public policy makers – 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 fifteen 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 – the institution’s net worth or equity, and that the leverage of the institution is its ratio of assets to equity;<sup>13</sup> thus, to take an example from Table 1, Bear Stearns at the end of 2007 had capital that was only 3% of its assets; or, 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

---

<sup>12</sup> More formal discussions of runs can be found in Diamond and Dybvig (1983), Postlewaite and Vives (1987), and Chen (1999).

<sup>13</sup> See, for example, the discussion in White (2009a).

limited extent) insurance companies was devastating to those parts of the financial sector.<sup>14</sup> The largest 15 financial institutions in the U.S. 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.<sup>15</sup>

The uncertainties of which financial institutions were still solvent – i.e., had assets with a (true, market) value that exceeded 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 U.S. 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 (since they were “government-sponsored enterprises”) – but that implicit guarantee had never been put to the test.

---

<sup>14</sup> A similar characterization can be found in Greenspan (2010); see also Swagel (2009).

<sup>15</sup> These data are from FDIC reports.

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.<sup>16</sup> And the freezing of the financial system, in turn, 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 \$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.

---

<sup>16</sup> See Zandi (2009, p. 11).

#### IV. Prudential Regulation<sup>17</sup>

“Financial regulation” encompasses a wide range of activities and goals.<sup>18</sup> In this section we will focus on prudential regulation:<sup>19</sup> the regulatory effort to maintain the solvency of financial institutions. Historically, prudential regulation in the U.S. has been applied to a number of categories of financial institutions – specifically, 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, we will confine our attention here to the prudential regulation of depository institutions (which, for the purposes of brevity, we will describe as “banks”).<sup>20</sup>

##### A. 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 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 non-financial corporations, the creditors (e.g., bond holders and/or lending banks) are expected to protect themselves – e.g., through covenants in bond indentures and through restrictions in lending agreements. But for banks (and a number of other categories of financial institution) the creditors – for banks, they are primarily the depositors – are seen as unable to protect themselves adequately. Hence, there is a longstanding

---

<sup>17</sup> This section draws heavily on White (2011).

<sup>18</sup> In addition to prudential regulation, “financial regulation” can encompass efforts to protect consumers from “toxic” (harmful) financial products and services, protect them from fraud, require adequate information about financial products and services or about the finances of publicly traded companies, limit directly the prices and fees that can be charged by financial institutions, etc.

<sup>19</sup> In the U.S. the traditional phrase for this type of regulation has been “safety-and-soundness” regulation. Outside of the U.S., however, “prudential” regulation has been the common term, and it is now widely used in the U.S. as well.

<sup>20</sup> Many of the arguments for and instruments of the prudential regulation of banks have their counterparts in the prudential regulation of other categories of financial institutions.

tradition – in the U.S., this tradition extends back at least to the 1860s<sup>21</sup> – of having government prudential regulation as the substitute protector for the depositors.

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

1) Banks are complex and difficult to understand – except (hopefully) by experts – even under the best of circumstances.<sup>22</sup>

2) Depositors – even commercial (i.e., business) depositors – tend to be relatively unsophisticated with respect to understanding the activities and finances of banks.

3) The primary liabilities that are issued by banks tend to be short-term demandable deposits, which the depositors expect to be liquid and available at short notice at par (i.e., they don't 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.<sup>23</sup>

4) Typically, there are large numbers of depositors in a bank, and the levels/amounts of their deposits vary over time. Coordination 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 non-financial corporations (where there is typically a single bank or a consortium of a few banks).

5) Because of #1-4, banks are susceptible to runs:<sup>24</sup> 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'

---

<sup>21</sup> The 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.

<sup>22</sup> Morgan (2003) empirically demonstrates the validity of this argument.

<sup>23</sup> This last version is really an argument for deposit insurance; but then the deposit insurer would want a system of prudential regulation to protect itself.

<sup>24</sup> As was noted above, more formal discussions can be found in Diamond and Dybvig (1983), Postlewaite and Vives (1987), and Chen (1999).

claims, those depositors may want to “run” to the bank 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 depositor “run” on the bank 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 the depositors’ funds and keeps only a small amount of cash on hand to deal with “normal” withdrawals. (Think of Jimmy Stewart's efforts, in the movie “It's a Wonderful Life,” to stop his depositors’ run by explaining to them that their money is not in the till but has been loaned to their neighbors.)

And, if depositors in the bank across the street see the run on the first bank and they fear that the same problems may apply to their bank as well, the depositors in this second bank may start a run on their bank. Thus can a “contagion” or “cascade” of bank runs can develop.<sup>25</sup>

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.<sup>26</sup> 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 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

---

<sup>25</sup> As became clear in September 2008, similar “runs” were possible by the short-term creditors to the thinly capitalized large investment banks in the U.S.

<sup>26</sup> And even for a solvent bank, the forced liquidation of its assets would likely yield losses and thus render it insolvent, generating losses for even the patient depositors.

the detriment of those creditworthy borrowers (who, at a minimum, will have to demonstrate their creditworthiness to another potential lender).<sup>27</sup>

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.<sup>28</sup> 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.<sup>29</sup> And deposit insurance provides a back-up reassurance 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.<sup>30</sup>

#### B. The primary tools of prudential regulation.

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.<sup>31</sup> 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 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

---

<sup>27</sup> For 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.

<sup>28</sup> For a skeptical view as to the efficacy of prudential regulation, especially outside of the U.S. context, see Barth et al. (2006).

<sup>29</sup> Of 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.

<sup>30</sup> For general arguments along these lines, see White (1991).

<sup>31</sup> Included in capital should be a "slice" of subordinated debt and/or debt that converts to equity ("contingent capital") when capital levels decline.



control of the bank (see #6 below). 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 non-financial 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 non-financial 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.<sup>32</sup>

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.<sup>33</sup>

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

5. Adequate numbers of well-trained and well-paid regulators. Because prudential regulation involves sophisticated monitoring of 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

---

<sup>32</sup> However, that activity may well be appropriate for a non-financial holding company of a bank. See White (2009b) for a general argument along these lines.

<sup>33</sup> U.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.

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.<sup>34</sup>

### C. 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 – because its liabilities are “run-able” and/or a cascade of bankruptcies/insolvencies/illiquidity might follow and/or its liability holders are in a poor position to protect themselves. 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% capital and highly run-able 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% 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 run-able liabilities (and a weak prudential regime by the Fed and no insurance for the liabilities); and
- 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).

---

<sup>34</sup> The 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.

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 as of early 2011. Only four of the five investment banks 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 in the sense that is described above but that are not otherwise 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 (see Table 1).

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.

## V. 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 difficulties of 2007-2009.

## References

- Barth, James R., Gerard Caprio, Jr., and Ross Levine, Rethinking Bank Regulation: Till Angels Govern. New York: Cambridge University Press, 2006.
- Bernanke, Ben S., "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression," American Economic Review 73 (June 1983), pp. 257-276.
- Chen, Yehning, "Banking Panics: The Role of the First-Come, First-Served Rule and Information Externalities," Journal of Political Economy, 107 (October 1999), pp. 946-968.
- Diamond, Douglas W. and Philip H. Dybvig, "Bank Runs, Deposit Insurance, and Liquidity," Journal of Political Economy, 91 (June 1983), pp. 401-419.
- Greenspan, Alan, "The Crisis," Brookings Papers on Economic Activity, 2010 (Spring 2010), pp. 201-246.
- Malkiel, Burton G., "Bubbles in Asset Prices," Center for Economic Policy Studies, Working Paper No. 200 (June 2010).
- Mishkin, Frederic S., "How Should We Respond to Asset Price Bubbles?" in Banque de France, Financial Stability Review, No. 12 ("Valuation and Financial Stability," October 2008), pp. 65-74.
- Morgan, Donald P., "Rating Banks: Risk and Uncertainty in an Opaque Industry," American Economic Review, 92 (September 2002), pp. 874-888.
- Postlewaite, Andrew and Xavier Vives, "Bank Runs as an Equilibrium Phenomenon," Journal of Political Economy, 95 (June 1987), pp. 485-491.
- Reinhardt, Carmen M. and Kenneth S. Rogoff, This Time is Different: Eight Centuries of Financial Folly. Princeton: Princeton University Press, 2009.
- Swagel, Phillip, "The Financial Crisis: An Inside View," Brookings Papers on Economic Activity, 2009 (Spring 2009), pp. 1-63.
- White, Lawrence J., "Market Failures and Government Failures: Some Cautionary Implications for Financial Reform," in Alison Harwood and Bruce L.R. Smith, eds., Sequencing? Financial Strategies for Developing Countries. Washington, D.C.: Brookings, 1997, pp. 66-85.
- White, Lawrence J., The S&L Debacle: Public Policy Lessons for Bank and Thrift Regulation. New York: Oxford University Press, 1991.
- White, Lawrence J., "The Role of Capital and Leverage in the Financial Markets Debacle of 2007-2008," Mercatus on Policy, No. 37, February 2009a.

White, Lawrence J., “Wal-Mart and Banks: Should the Twain Meet? A Principles-Based Approach to the Issues of the Separation of Banking and Commerce,” Contemporary Economic Policy, 27 (October 2009b), pp. 440-449.

White, Lawrence J., “Corporate Governance and Prudential Regulation of Banks: Is There any Connection?” in James R. Barth, Chen Lin, and Clas Wihlborg, eds., Research Handbook for Banking and Governance. Edward Elgar: Northampton, MA, 2011 (forthcoming).

Wolf, Charles, Jr., Markets or Governments: Choosing Between Imperfect Alternatives. Cambridge, Mass.: MIT Press, 1989.

Zandi, Mark, “Testimony on ‘Systemic Risk: Are Some Institutions Too Big to Fail, and If so, What Should We Do about It?’” before the Financial Services Committee, U.S. House of Representatives, July 21, 2009.

Table 1: The Fifteen Largest Financial Institutions in the U.S., 2007  
(by asset size, December 31, 2007)

<b>Rank</b>	<b>Financial institution</b>	<b>Category</b>	<b>Assets (\$ billion)</b>	<b>Equity as a % of assets</b>
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

Note: 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 standalone finance company, its asset size (\$650B in 2007) would place it at #12.

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