

Should Increased Regulation of Bank Risk-Taking Come from Regulators or from the Market?

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The current expansion of the financial safety net that protects debtholders and depositors of financial institutions from losses began on March 15, 2008, with the bailout of Bear Stearns' creditors. The New York Fed assumed the risk of loss for \$30 billion (later reduced to \$29 billion) of assets held in the portfolio of the investment bank Bear Stearns as inducement for its acquisition by J.P. Morgan Chase. In addition, it opened the discount window to primary dealers in government securities, some of which were part of investment banks rather than commercial banks. The rationale for this and subsequent extensions of the safety net was prevention of the systemic risk of a cascading series of defaults brought about by wholesale withdrawal of investors from money markets and depositors from banks. At the same time, there is also recognition of how a financial safety net creates moral hazard, that is, an increased incentive to risk-taking (Lacker 2008). Given the twin goals of financial stability and mitigation of moral hazard, what financial (monetary and regulatory) regime should emerge as a successor to the current one?

Such a regime must address the consensus that financial institutions took on excessive risk in the period from 2003 to the summer of 2007. They did so through the use of leverage that involved borrowing short-term, low-cost funds to fund long-term, illiquid, risky assets. The conclusion follows that a

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new financial regime must limit risk-taking. However, should that limitation come from increased oversight by government regulators or should it come from the enhanced market discipline that would follow from sharply curtailing the financial safety net? Each alternative raises the issue of tradeoffs. Does the optimal mix of financial stability and minimal moral hazard lie with an extensive financial safety net and heavy government regulation of the risk-taking encouraged by moral hazard? Alternatively, does the optimal mix lie with a limited financial safety net and the market monitoring of risk-taking that comes with the possibility of bank runs combined with procedures for placing large financial institutions into conservatorship?

This article argues for the latter alternative. Its feasibility requires the premise that the financial system would not be inherently fragile in the absence of an extensive financial safety net. Such a premise involves contentious counterfactuals. There is no shortcut to the use of historical experience to decide between two contrasting views of what causes financial market fragility. Do financial markets require regulation because they are inherently fragile or are they fragile because of the way that they have been regulated and because of the way that the financial safety net has exacerbated risk-taking? Are financial markets inherently subject to periodic speculative excess (manias) that result in financial collapse and panicky investor herd behavior so that in the absence of a safety net, depositors would run solvent banks out of fear that other depositors will run? Alternatively, in the absence of the risk-taking induced by the moral hazard of the safety net, would market discipline produce contracts and capital levels sufficient to protect all but insolvent banks from runs? Would regulators then be able to place insolvent banks into conservatorship (with mandatory haircuts to debtors and large depositors) without destabilizing the remainder of the financial system?

Section 1 criticizes the perennially popular assumption that financial markets are inherently prone to speculative excess followed by subsequent collapse. If monetary arrangements prevent the occurrence of monetary disturbances that interfere with the market determination of the real interest rate, the price system works well to prevent extended fluctuations in economic activity around trend growth. Creditors and debtors will restrain risk-taking by the financial system if they can lose money in the event of the failure of financial institutions. Section 2 illustrates the tradeoffs created by a financial safety net through the example of the run on prime money market funds that occurred after the failure of Lehman Brothers on September 15, 2008. Section 3 summarizes the rise of too big to fail (TBTF). The safety net considered in this article includes not only deposit insurance and TBTF but also the ways that government subsidizes private risk-taking through the off-budget allocation of credit to housing. Section 4 then examines the role of off-budget housing subsidies in the housing boom-bust experience, especially as provided by the

government sponsored enterprises (GSEs).¹ Government use of off-budget subsidies to allocate capital toward housing and away from other productive uses has been a major source of financial instability both recently and in the 1980s.

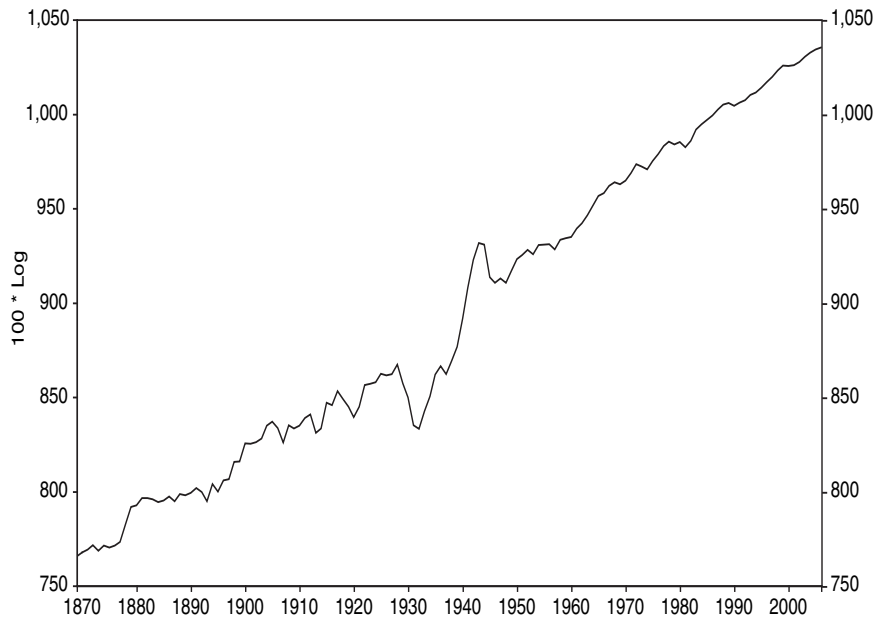
Section 6 discusses the interaction between TBTF policies and the risk-taking of banks reflected in the concentration of mortgage lending in their asset portfolios and the creation of off-balance-sheet vehicles for holding securitized mortgage debt. Based on the conclusion that the current system of a steadily expanding financial safety net combined with heavy regulation has increased financial instability, Section 7 advances a proposal for limiting the financial safety net. An appendix reviews the literature on banking panics. This review does not support the inherent-fragility belief underlying the current extensive financial safety net. That is, it does not support the belief that regulators must prevent financial institutions from failing in a way that imposes losses on bank creditors (debtors and large depositors) in order to head off a general panic that closes solvent and insolvent banks alike.

1. CAN MARKET DISCIPLINE AND THE PRICE SYSTEM WORK?

As shown in Figure 1, living standards as measured by output per capita have risen over time. At the same time, there are significant fluctuations around trend. In the objective language of the National Bureau of Economic Research, economists refer to the upturns as economic expansions and the downturns as economic declines. In popular discourse, there is a counterpart language of booms and busts driven by bright exuberance and dark pessimism. The most pronounced fluctuations in the graph mark the downturn of the Great Depression and the upturn of World War II. The combination of prolonged high unemployment during the Depression followed by low unemployment during World War II gave rise to Keynesian models based on the assumption that the price system had failed to coordinate economic activity in competitive markets. Keynesian models ceded to dynamic, optimizing models within which the price system coordinates economic activity. In these latter models, given frictions (for example, price stickiness), shocks drive output fluctuations.

Despite this progress in macroeconomic modeling, the current recession has recreated much of the intellectual and policymaking environment of the Depression. In the Depression, popular opinion held speculation on Wall Street responsible for the economic collapse. In the current recession, popular opinion again holds Wall Street responsible. The greed of bankers created

¹ The GSEs are the Federal National Mortgage Association (Fannie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac), the Federal Home Loan Banks (FHLBs), and the Federal Housing Administration (FHA).

Figure 1 Real Output Per Capita

Notes: Annual observations of 100 times the logarithm of per capita real output. Real output is real gross national product (GNP) from Balke and Gordon (1986) until 1929. Thereafter, real output is real GNP from the Commerce Department.

speculative excess. The inevitable collapse created an overhang of bad debt and a dysfunctional financial system that has prevented consumers and businesses from spending.

In the Depression, to revive financial intermediation, the Hoover administration created the Reconstruction Finance Corporation to recapitalize banks and thus to stimulate commercial lending. The Roosevelt administration created a variety of GSEs to encourage lending; for example, it created the Federal National Mortgage Association to stimulate lending in the housing market. To limit the risk-taking presumed to be driven by speculative excess, Congress passed the Glass-Steagall Act in 1933, which separated commercial and investment banking. Corresponding to the concentration on credit policies, policymakers paid no attention to the money creation of the Federal Reserve.

In the current recession, just as in the Depression, the short-term emphasis has been on reviving financial intermediation. Public debate focused on the long-term has emphasized government regulation of risk-taking by financial institutions. Beyond measures to revive markets for the securitization of

mortgage and consumer debt and to stimulate lending by commercial banks through the removal of “toxic” assets and through recapitalization, policy-makers have emphasized fiscal stimulus through a combination of tax cuts and expenditure. The rationale for these programs seems little more than what economists offered in the Depression. In economic downturns, because banks do not lend enough, either the central bank or government GSEs should make up the deficit in lending. Similarly, because the public does not spend enough, the government should make up the deficiency with deficit spending.

One strand of the current debate reflects a centuries-old psychological explanation of economic fluctuations based on the observed correlation between the optimism and distress in financial markets with the respective cyclical up-swings and downturns in the economy. Indeed, the founders of the Fed wrote the real bills doctrine into The Federal Reserve Act based on the belief that cycles of speculative mania followed by busts accounted for economic fluctuations (Hetzel 2008, Ch. 3). The absence of discussion regarding the modern models of economics reflects the implicit assumption that the price system has failed and that government action must supersede its working. But is this popular diagnosis correct and should policy again follow the intellectual outlines advanced in the Depression? Are current policies based on correlations between financial and economic distress that do not reflect causation running from the former to the latter. In brief, are current policies treating symptoms rather than causes?

This article and its counterpart (Hetzel 2009) offer a critique of current policy. The current recession does not constitute a failure of the price system to regulate economic fluctuations and a failure of markets to regulate risk adequately. Rather, the recession reflects the way in which monetary policy and the financial safety net have undercut market mechanisms. The real interest rate plays the role of fly wheel in the stabilization of economic fluctuations around trend. When the public is optimistic about the future, the real interest rate needs to be relatively high. Conversely, pessimism about the future requires a relatively low real rate. The real interest rate plays this role adequately in the absence of inertia introduced by central bank interest rate smoothing relative to cyclical movements in output. Such smoothing limits the decline in interest rates in response to declines in economic activity through restraint in money creation and similarly limits the increase in interest rates in response to increases in economic activity through increases in money creation (Hetzel 2009).

The focus in this article is on how the financial safety net encouraged excessive risk-taking by eliminating the monitoring that would occur if the creditors of banks (large depositors and debtholders) suffered losses in the event of bank insolvency. Furthermore, the article makes the argument that the unsustainable rise in house prices and their subsequent sharp decline derived from the combination of a public policy to expand home ownership to unrealistic

levels and from a financial safety net that encouraged excessive risk-taking by banks through asset portfolios concentrated in mortgages. There is a need for more regulation of the risk-taking of banks but that regulation should come from the market discipline imposed through severe limitation of the financial safety net, especially elimination of TBTF. Also, the political system should allow the marketplace to determine the allocation of the capital stock between housing and other productive uses.

2. TO BAIL OR NOT TO BAIL? THE CASE OF THE MONEY MARKET FUNDS

What are the tradeoffs that society faces in creating a financial safety net to prevent bank runs? Or, as Senator Carter Glass put the issue during the Senate debate on the Banking Act of 1933 (the Glass-Steagall Act), “Is there any reason why the American people should be taxed to guarantee the debts of banks, any more than they should be taxed to guarantee the debts of other institutions, including the merchants, the industries, and the mills of the country?”²

There is a market demand for financial instruments redeemable at par or, in more current terminology, with stable NAV (net-asset value). Many investors (depositors) want to be able to withdraw on demand a dollar for every dollar invested (deposited) in a financial institution. At the same time, investors also like to receive interest. Traditionally, banks have supplied such instruments. They have invested in interest-bearing assets while holding sufficient capital to guarantee against credit risk so that they can guarantee withdrawal of deposits at par. At the same time, the ability to withdraw bank deposits at par and on demand creates the possibility of bank runs, which can destabilize economic activity.

A financial safety net constituted by deposit insurance and TBTF can preclude bank runs but at the cost of creating perverse moral hazard incentives. The safety net provides an incentive to banks to acquire risky assets offering a high rate of return without increasing capital commensurately. In good times, bank shareholders do well, while in extremely bad times the insurance fund bails out the bank’s depositors and debtholders. In principle, regulators could draw a clear line demarcating the financial safety net. On the insured side, regulators would limit risk-taking and require high capital ratios. On the uninsured side, creditors with their own money at risk would do this work by requiring limitations on risk-taking and high capital ratios. The tension arises when regulators cannot draw a credible line separating the insured from the uninsured. Institutions on the uninsured side have an incentive to find ways to retain the cheap funds guaranteed by the perception that they are on the

² Cited by Walker Todd (2008) from Rixey Smith and Norman Beasley’s, *Carter Glass: A Biography* (Smith and Beasley 1939).

insured side while acquiring the risky asset portfolios with high returns of institutions on the uninsured side.

For example, some economists in the 1930s proposed a line with “narrow banks” on the safe side. These banks, which would hold 100 percent reserves against deposits and thus be run-proof, would provide payment services. All other banks would be investment banks (Hart 1935). Friedman (1960, 73) pointed out “the existence of a strong incentive to evade the requirement of 100% reserve. Much ingenuity might thus be devoted to giving medium-of-exchange qualities to near-monies that did not qualify under the letter of the law as deposits requiring 100% reserves.” The run on money market funds following the Lehman bankruptcy illustrates these forces.

Market commentary provides evidence that before the Lehman bankruptcy investors assumed that regulators would never let a large financial institution default on its debt. That is, the official line between the insured and uninsured institutions was not credibly drawn. The bailout of Bear Stearns debtholders in March 2008 and Fannie Mae and Freddie Mac debtholders in early September 2008 reinforced this belief. Moreover, the Primary Dealer Credit Facility announced March 16, 2008, plausibly brought into the financial safety net investment banks like Lehman Brothers, Merrill Lynch, and Goldman Sachs because of their status as primary dealers in government securities.³ As a result, the bankruptcy of Lehman Brothers in mid-September and later the losses imposed on debtholders with the closure of the thrift, Washington Mutual, produced a discrete increase in the market’s perception of default risk among financial institutions. At the same time, a money fund, Reserve Primary Fund, “broke the buck.” That is, as a result of holding Lehman debt rendered worthless by the Lehman bankruptcy, the value of the assets of this

³ For example, *The Washington Post* (Irwin 2008) wrote shortly after the collapse of Bear Stearns: “With its March 14 decision to make a special loan to Bear Stearns and a decision two days later to become an emergency lender to all of the major investment firms, the central bank abandoned 75 years of precedent under which it offered direct backing only to traditional banks. Inside the Fed and out, there is a realization that those moves amounted to crossing the Rubicon, setting the stage for a deeper involvement in the little-regulated markets for capital that have come to dominate the financial world. Leaders of the central bank had no master plan when they took those actions, no long-term strategy for taking a more assertive role regulating Wall Street. They were focused on the immediate crisis...Fed leaders knew that they were setting a precedent that would indelibly affect perceptions of how the central bank would act in a crisis. Now that the central bank has intervened in the workings of Wall Street, all sorts of players in the financial markets will assume that it could happen again. Major investment banks might be willing to take on more risk, assuming that the Fed will be there to bail them out if the bets go wrong...The parties that do business with investment banks might be less careful about monitoring whether the bank will be able to honor obscure financial contracts. That would eliminate a key form of self-regulation for investment banks.”

The *Wall Street Journal* (2008f) reported: “After Bear Stearns’s brush with death, the Federal Reserve for the first time allowed investment houses to borrow from the government on much the same terms as commercial banks. Many on Wall Street saw investment banks’ access to an equivalent of the so-called Fed discount window as a blank check should hard times return.”

fund declined below the value of its liabilities.⁴ Many large institutional investors immediately withdrew their funds from other prime money market funds out of fear that these funds could also be holding paper from investment banks faced with the possibility of default. Because the prime brokerage operations of commercial banks were effectively included in the financial safety net while those of the investment banks were not, customers of the remaining investment banks shifted their accounts to commercial banks; the remaining investment banks then appeared uncompetitive.

The Fed and the Treasury intervened to limit the run on prime money funds in two ways. First, with the creation of the Asset-Backed Commercial Paper Money Market Fund Liquidity Facility (AMLF) announced September 19, 2008, money funds became eligible to borrow from the discount window at the Boston Fed using asset-backed commercial paper (ABCP) as collateral. Second, on September 29, 2008, the Treasury announced a program to guarantee the shares of money market fund investors held as of September 19, 2008, in participating funds.⁵ Prime money market funds held significant amounts of short-term debt issued by banks. Especially, given the uncertain financial situation of some large banks at the time, there was no ready alternative market for this debt.⁶ By extending the financial safety net to prime money market mutual funds, regulators avoided market disruption.

At the same time, regulators created moral hazard problems. Money market mutual funds have competed with banks by offering redemption of their deposits at par (NAV stability). More precisely, they have used amortized cost accounting rather than mark-to-market accounting. As a result, when the value of their assets falls, they do not mark down the value of their shares. Shareholders then have an incentive to run in case the fund breaks the buck. With mark-to-market accounting, in contrast, there is no incentive to run.

⁴ As of March 2006, the Reserve Primary Fund invested only in government securities. It then began to invest in riskier commercial paper, which by 2008 comprised almost 60 percent of its portfolio. In that way, it could raise the yield it offered and attract more customers while exploiting the image of money market mutual funds as risk-free. The *Wall Street Journal* (2008e) wrote: “[B]y this September [2008], the Primary Fund’s 12-month yield was the highest among more than 2,100 money funds tracked, according to Morningstar—4.04%, versus an average of 2.75%. With this stellar yield, the fund’s assets tripled in two years to \$62.6 billion.”

⁵ More generally, all governments expanded insurance of the liabilities of their financial institutions in part to prevent them from being placed at a competitive disadvantage with banks of other nations whose governments extended blanket insurance to their banks. Such actions represented an increase in protectionism through subsidization of the ability of national banks to compete for funds.

⁶ Preventing a run on money market funds worked as part of TBTF in that the prime funds held significant amounts of bank debt. “A large share of outstanding commercial paper is issued or sponsored by financial intermediaries” (Board of Governors 2008). This arrangement whereby banks raise funds indirectly rather than by issuing their own deposits arises in part as a way of circumventing the legal prohibition of payment of interest on demand deposits. Elimination of this prohibition would make the financial system less fragile.

Prime money market funds had been competing for funds as banks without the significant regulatory costs that come with being a bank. If, in September, regulators had drawn the financial-safety-net line to exclude money market mutual funds, these funds would have been subject to the market discipline of possible failure. They would then have had to make one of two hard choices to become run-proof. Prime money funds could have chosen some combination of high capital and extremely safe, but low-yielding, commercial paper and government debt. Alternatively, they could have accepted variable NAV as the price of holding risky assets. Either way, the money market mutual fund industry would have had to shrink. At present, the incentive exists for money funds to take advantage of the government safety net by increasing the riskiness of their asset portfolios.

3. THE RISE OF TBTF

In his 1986 book *Bailout*, Irvine Sprague, who was chairman of the Federal Deposit Insurance Corporation (FDIC) from 1979 through 1981 and continued as a board member through 1985, detailed the origin of TBTF. This section summarizes his discussion of the issues raised by TBTF. Would there be a “domino” effect of closing a large bank with losses to its large creditors? What are the moral hazard consequences of TBTF?

Congress had intended that deposit insurance be used only to compensate holders of insured deposits at failed banks. There was no intention for the FDIC to bail out uninsured depositors and debtholders. In the 1950 Federal Deposit Insurance Act, Congress added an “essentiality” condition to restrict FDIC bailouts. This act gave the FDIC authority to make an insolvent bank solvent by transferring funds to the bank only if it “is essential to provide adequate banking services in its community.” Ironically, the FDIC used that language to justify expanding its mandate to one of bailing out all creditors of insolvent banks (Sprague 1986, 27ff).

According to Sprague (1986, 48 and 38), the FDIC set the precedent for bailouts and the move “away from our historic narrow role of acting only after the bank had failed” in 1971 with the African American-owned bank, Unity Bank, in inner-city Boston out of fear that its failure would “touch off a new round of 1960s-style rioting.” The systemic-failure rationale for bailouts first arose in 1972 in connection with the failure of the Detroit Commonwealth Bank, which had a billion-dollar asset portfolio. According to Sprague’s account, the Fed always vociferously supported bailouts. Sprague (1986, 53, 70) cited Fed Board chairman Arthur Burns’ fear that “the domino effect could be started by failure of this large bank with its extensive commercial loan business and its relationships with scores of banks. . . . Nobody wanted to face up to the biggest bank failure in history, particularly the Fed.”

The systemic argument appeared again with the 1980 bailout of First Pennsylvania Bank with \$9 billion in assets and whose “[I]oan quality was poor” and whose “[I]everage was excessive” (Sprague 1986, 85 and 89):

The domino theory dominated the discussion—if First Pennsylvania went down, its business connections with other banks would entangle them also and touch off a crisis in confidence that would snowball into other bank failures here and abroad. It would culminate in an international financial crisis. . . . Fed Chairman Paul Volcker said he planned to continue funding indefinitely until we could work out a merger or a bailout to save the bank.

The policy of TBTF took off in the early 1980s during the less-developed country (LDC) debt crisis. When Argentina, Brazil, and Mexico effectively defaulted on their debt, almost all large U.S. money center banks became insolvent (Hetzel 2008, Ch. 14). Regulator unwillingness to close large, insolvent banks became publicly apparent in 1984 with the bailout of the debtholders and uninsured depositors of Continental Illinois and of its bank holding company. At the time, regulators claimed that they had no choice but to bail out Continental because of the large number of banks holding correspondent balances with it.⁷ Subsequent research showed that even with losses significantly greater than estimated at the time only two banks would have incurred losses greater than 50 percent of their capital (Kaufman 1990, 8).⁸ After the Continental bailout, the Comptroller of the Currency told Congress that 11 bank holding companies were too big to fail (Boyd and Gertler 1994, 7). However, regulators also extended TBTF to small banks. For example, in 1990, regulators bailed out the National Bank of Washington, which ranked 250th by size in the United States (Hetzel 1991).

“Although Continental Illinois had over \$30 billion in deposits, 90 percent were uninsured foreign deposits or large certificates substantially exceeding the \$100,000 insurance limit. . . . First Pennsylvania had a cancerous interest-rate mismatch; Continental was drowning in bad loans” (Sprague 1986, 184 and 199). Continental, with its risky loan portfolio due to lack of diversification and wholesale funding, became the prototype for future failures and bailouts. Continental held a “shocking” \$1 billion in loan participations from the Oklahoma bank Penn Square, which had “grown pathologically” and had made “chancy loans to drillers” (Sprague 1986, 111–3). Penn Square had in turn grown rapidly with wholesale money. “The Penn Square experience gave

⁷ William Isaac, chairman of the FDIC during the Continental bailout, later expressed regret, noting that most of the large banks about which the FDIC was concerned failed subsequently with greater losses to the FDIC than if they had been closed earlier (Kaufman 1990, 12).

⁸ With TBTF, banks and other financial market participants possess no incentive to diversify their exposure to other financial institutions thereby making TBTF a self-fulfilling need.

us a rough alert to the damage that can be done by brokered deposits funneled in the troubled institutions” (Sprague 1986, 133).

Regulators were unwilling to let Continental fail with losses to creditors because of the fear of systemic risk: “. . . Volcker raised the familiar concern about a national banking collapse, that is, a chain reaction if Continental should fail” (Sprague 1986, 183).⁹ However, Continental highlighted all the moral hazard issues associated with TBTF and excessive risk-taking. Later, the *Wall Street Journal* (1994) wrote: “Continental’s place in history may be as a warning against too-rapid growth and against placing too much emphasis on one sector of the banking business—in this case energy lending.”

Sprague (1986, 249 and preface, xi) foretold the problems of 2007–2008:

The banking giants are getting a free ride on their insurance premiums and flaunting capital standards by moving liabilities off their balance sheets. . . . [T]he regulators. . . should address the question of off-book liabilities. . . Continental. . . had 30 billion of off-book liabilities.

I hope this book will help raise public awareness of the pitfalls. . . of the exotic new financial world of the 1980s.

Sprague (1986, preface, x) also observed:

Continental was. . . a link in a [bailout] chain that we had been forging since the 1971 rescue of Unity Bank. . . Other bailouts [beyond Unity], of successively larger institutions, followed in ensuing years; there is no reason to think that the chain has been completed yet.

This “chain” now seems likely to stretch out forever—a creation of regulators’ fear of systemic risk and the increasing incentive to risk-taking promoted by an ever-expanding financial safety net. Walter and Weinberg (2002) estimated that, in 1999, 61 percent of the liabilities of financial institutions were either explicitly guaranteed by the government or could plausibly be regarded as implicitly guaranteed. Under the rubric of TBTF, these insured liabilities included the liabilities of the 21 largest bank holding companies and the two largest thrift holding companies. This estimate seems overly conservative, however. As Walter and Weinberg (2002, 380) pointed out,

When troubles in large banks have surfaced in the past, uninsured holders of short-term liabilities frequently have been able to withdraw their funds from the troubled bank before regulators have taken it over. Bank access to loans from the Federal Reserve has allowed short-term liability holders to escape losses.

⁹ Sprague (1986, 165) reported the concern that if Continental failed, deposit withdrawals would spread to Manufacturers Hanover, a bank under duress because of its exposure to LDC debt.

Goodfriend and Lacker (1999) addressed the contradiction of assuring stability through bailouts while increasing it through the moral hazard arising from bailouts. The financial panic of 2008 fits the Goodfriend-Lacker hypothesis that the dialectic of excessive risk-taking, financial losses triggered by a macroeconomic shock, and runs on insolvent institutions, followed by further extension of the safety net, will lead to ever-larger crises. As a way out of this spiral, they point to the Volcker disinflation in which the Fed incurred the short-run cost of disinflation through following a consistent strategy to maintain low inflation and, as a result, to reap the long-run benefits of price stability. Just as the Fed conditioned the public's expectations to conform to an environment of near price stability, regulators could condition investor expectations to conform to an environment in which bank creditors bear losses in the event of a bank failure. Creditors would then monitor and limit bank risk-taking. The Appendix examines critically the counter argument that bailouts are inevitable because of an inherent systemic risk endemic to banking.

4. OFF-BUDGET HOUSING SUBSIDIES

Understanding the role of the subprime crisis in the current financial crisis requires understanding the role played by the GSEs. They increased the demand for the housing stock, helped raise the homeownership rate to an unsustainable level, and, as a consequence of a relatively inelastic supply of housing due to land constraints, contributed to a sharp rise in housing prices.¹⁰ That rapid rise in housing prices made the issuance of subprime and Alt-A loans appear relatively risk-free.

In 1990, Freddie Mac and Fannie Mae owned 4.7 percent of U.S. residential mortgage debt and by 1997 they owned 11.4 percent. In 1998, that figure began to rise sharply and in 2002 it reached 20.4 percent (the figure is 46 percent including mortgage debt guaranteed for payment of principal and interest).¹¹ After 2003, as a result of portfolio caps placed on these companies by the Office of Federal Housing Enterprise Oversight (OFHEO) because of accounting irregularities, their market share declined. However, they continued to purchase subprime and Alt-A loans.¹² The Congressional Budget

¹⁰ Duca (2005, 5) provides citations showing that the rise in house prices was most pronounced in areas in which land supply was inelastic. Also, the swings in house prices were dominated by changes in land prices, not structure costs.

¹¹ Total residential mortgage debt outstanding is from the Board of Governors' Flow of Funds Accounts, Table L. 218. Data on the holding of mortgages by Fannie and Freddie and on the total mortgage-backed securities they guaranteed are from OFHEO (2008, 116).

¹² The *Washington Post* (Goldfarb 2008) reported, "In a memo to former Freddie chief executive officer Richard Syron and other top executives, former Freddie chief enterprise risk officer David Andrukonis wrote that the company was buying mortgages that appear 'to target borrowers who would have trouble qualifying for a mortgage if their financial position were adequately disclosed.' Andrukonis warned that these mortgages could be particularly harmful for Hispanic

Office (U.S. Congress 2008) reported that as of 2008:Q2 Freddie and Fannie held \$780 billion, or 15 percent, of their portfolios in these assets.¹³ The Federal Housing Administration also encouraged borrowers to take out high loan-to-value mortgages.¹⁴

Early in the 2000s, the GSEs channeled increased foreign demand for riskless dollar-denominated debt into the housing market. When the interest rate on U.S. government securities fell to low levels, they encouraged foreign investors to shift from Treasury securities to agency debt (Timmons 2008). In doing so, investors could take advantage of somewhat higher yields on debt with an implicit government guarantee. In March 2000, foreigners owned 7.3 percent of the total outstanding GSE debt (\$261 billion) and, in June 2007, they owned 21.4 percent of the total (\$1.3 trillion).¹⁵ Foreign central banks and other official institutions owned almost \$1 trillion of GSE debt in 2008.¹⁶

Other government policies that increased the demand for the housing stock included Community Reinvestment Act lending by banks. In 1996, lending under this program began to increase substantially because of a change in regulations that provided quantitative guidelines for bank lending to communities judged underserved by regulators (Johnsen and Myers 1996). Furthermore, in 1997, Congress increased the value of a house as an investment by eliminating capital gains taxes on profits of \$500,000 or less on sales of homes. “Vernon L. Smith, a Nobel laureate and economics professor at George Mason

borrowers, and they could lead to loans being made to people who would be unlikely to pay them off.”

“Mudd [former Fannie Mae CEO] later reported that Fannie moved into this market ‘to maintain relevance’ with big customers who wanted to do more business with Fannie, including Countrywide, Lehman Brothers, IndyMac and Washington Mutual. The documents suggest that Fannie and Freddie knew they were playing a role in shaping the market for some types of risky mortgages. An email to Mudd in September 2007 from a top deputy reported that banks were modeling their subprime mortgages to what Fannie was buying.... ‘I’m not convinced we aren’t leading the market into this product,’ Andrukonis wrote.”

¹³ The numbers could be larger. As reported in the *New York Times* (Browning 2008), “The former executive, Edward J. Pinto, who was chief credit officer at Fannie Mae, told the House Oversight and Government Reform Committee that the mortgage giants now guarantee or hold 10.5 million nonprime loans worth \$1.6 trillion—one in three of all subprime loans, and nearly two in three of all so-called Alt-A loans, often called ‘liar loans.’ Such loans now make up 34 percent of the total single-family mortgage portfolios at Fannie Mae and Freddie Mac.”

“Arnold Kling, an economist who once worked at Freddie Mac, testified that a high-risk loan could be ‘laundered,’ as he put it, by Wall Street and returned to the banking system as a triple-A-rated security.... Housing analysts say that the former heads of Fannie Mae and Freddie Mac increased their non-prime business because they felt pressure from the government and advocacy groups to meet goals for affordable housing.”

¹⁴ The FHA insured no-down-payment loans through down payment assistance programs. A homebuilder made a contribution to a “nonprofit” organization, which cycled the money to the homebuyer. The homebuilder received his money back through an above-market price for the house. The buyer paid a fee to the “nonprofit.” The end result was a mortgage with no equity (*Wall Street Journal* 2008b). “The program... now accounts for more than a third of the agency’s portfolio” (*New York Times* 2008).

¹⁵ “Report on Foreign Portfolio Holdings of U.S. Securities” from www.treas.gov/tic/sh/2007r.pdf.

¹⁶ Board of Governors Statistical Release H.4.1 Memorandum Item.

University, has said that the tax law was responsible for ‘fueling the mother of all housing bubbles’” (Bajaj and Leonhardt 2008).

The Federal Home Loan Banks (FHLBs) also encouraged the increase in home mortgage lending. By law, the purpose of the FHLBs is to subsidize housing and community lending (12 U.S.C. § 1430(a)(2)). For example, as of December 31, 2007, the FHLB system had advanced \$102 billion to Citibank.¹⁷ FHLB advances grew from \$100 billion to \$200 billion from 1997–2000 and then accelerated. As of 2008:Q3, the system had advanced \$911 billion to banks and thrifts. In addition, the FHLBs subsidize housing directly by borrowing at their government-guaranteed interest rate and purchasing mortgage-backed securities (MBSs) for their own portfolio (typically 40 percent of their assets). As of 2007:Q4, they held \$132 billion of residential mortgage-backed securities.

Ashcraft, Bech, and Frame (2008) point out how the FHLBs have become the lender of last resort for banks and thrifts, but without supervisory and regulatory authority constrained by FDICIA (the Federal Deposit Insurance Act of 1991). For example, advances to Countrywide Bank went from \$51 billion in 2007:Q3 to more than \$121 billion in 2008:Q1.¹⁸ Between 2007:Q2 and 2007:Q4, advances to the Henderson, Nevada bank of Washington Mutual, which failed in late September 2008, went from \$21.4 billion to \$63.9 billion. Because the FHLBs possess priority over all other creditors, they can lend to financial institutions without charging risk premia based on the riskiness of the institution’s asset portfolio. Siems (2008, abstract) finds the following about banks reliant on FHLB borrowing:

[As] the liability side of the balance sheet has shifted away from core deposits and toward more borrowed money, the asset side of the balance sheet seems to have also shifted to fund riskier activities. Banks that have borrowed more from the Federal Home Loan Banks... are generally deemed to be less safe and sound according to bank examiner ratings.

Just as had occurred in the early 1980s, funds provided by the FHLBs and by brokered deposits guaranteed by the FDIC allowed small banks and thrifts to grow rapidly and acquire risky asset portfolios concentrated in mortgages. For example, the Office of Thrift Supervision closed IndyMac Bancorp in July

¹⁷ Data are from FDIC-Statistics of Depository Institutions Report, Memoranda, FHLB advances (www2.fdic.gov/sdi/rpt.Financial.asp) and Federal Financial Institutions Examination Council (FFIEC): <https://cdr.ffiec.gov/public/SearchFacsimiles.aspx>, (Schedule RC- Balance Sheet and RC-M-Memoranda, 5.a).

¹⁸ Data are from the FFIEC (<https://cdr.ffiec.gov/public/SearchFacsimiles.aspx>). In January 2008, Bank of America agreed to a merger with Countrywide, which was a casualty of subprime lending. Shortly after the subprime crisis broke, the *Wall Street Journal* (2007a) reported about Countrywide, the largest independent mortgage lender in the United States: “Countrywide is counting on its savings bank, along with Fannie Mae and Freddie Mac, to fund nearly all of its future lending by drawing on deposits and borrowings from the Federal Home Loan Bank system.”

2008 at a cost estimated by the FDIC at about \$9 billion (*Wall Street Journal* 2008c). From December 2001 through June 2008, its assets grew from \$7.4 billion to \$30.7 billion. As of the latter date, IndyMac financed 51 percent of its assets with FHLB advances and brokered deposits.¹⁹

The homeownership rate was at 64 percent in 1986, where it remained through 1995. Starting in 1996, it began to rise. Homeownership rates peaked in 2005 at 69 percent. In real terms, house prices remained steady over the period 1950–1997 (measured using the Case-Shiller index from 1950–74 and the OFHEO index thereafter both deflated by the consumer price index). Starting in 1999, they began to rise beyond their previous cyclical peaks (reached in the mid-1950s, late 1970s, and early 1990s) and then rose somewhat more than 50 percent above both their 1995 value and their long-run historical average.²⁰ The ratio of house prices to household incomes remained at its longer-run historical average of somewhat less than 1.9 until 2001. It then climbed sharply and reached 2.4 in 2006 (Corkery and Hagerty 2008).

One of the major public policy priorities of the United States is to increase home ownership. Just as the incentives to risk-taking produced by the financial safety net encouraged leverage in the financial sector, affordable housing programs worked to make housing affordable by encouraging homeowners to leverage their home purchases with high loan-to-value ratios.²¹ The incentives for excessive leveraging created both by the financial safety net and by government programs to increase homeownership worked to create the fragility of the financial system revealed in the summer of 2007.

5. TBTF AND THE ABSENCE OF MONITORING

In response to the distress in financial markets that occurred after August 2007, popular commentary has asserted the need for more “regulation” of risk-taking. However, why was existing regulation deficient? Popular commentary highlights the private greed of bankers and the absence of control due to deregulation. But are not bank creditors (debtholders and depositors) also greedy? Do they not care about losing money? Why did they not monitor bank risk-taking? As explained in Section 3 and the Appendix, the major “deregulation” that has occurred has taken the form of an expanding financial safety net that has undercut the market regulation of risk-taking by banks.

Because of the financial safety net provided by deposit insurance, by TBTF, by the FHLBs, and by the Fed’s discount window, banks have access

¹⁹ FDIC call reports (www2.fdic.gov/Call.TFR.Rpts/).

²⁰ FHLMC and FNMA data are from the OFHEO Web site. Data on home ownership rates and real house prices are from the Federal Reserve System Web site.

²¹ Robert Shiller (2008) commented, “They [average homeowners] typically have all their assets locked up in real estate and are highly leveraged. And this is what they are encouraged to do.”

to funds whose cost does not increase with increases in the riskiness of their asset portfolio. As detailed below, bank balance sheets became riskier, especially after 2003, through a significantly increased concentration in holdings of mortgages. Nevertheless, the cost of funds to banks did not rise in response. As measured by credit default swap spreads (senior debt, five-year maturity), the cost of issuing debt by the large banks did not increase until August 2007 when the subprime crisis appeared. As a result, banks had an incentive to increase returns by funding long-term risky assets with short-term debt. For banks, this risk-maturity leveraging took the form of limited portfolio diversification due to concentration in real estate loans and also the creation of off-balance-sheet conduits holding MBSs funded by short-term commercial paper.

The analysis of Jensen and Meckling (1976) explains how markets undistorted by government socialization of risk restrain risk-taking. Equity holders in corporations have an incentive to take risks that are excessive from the perspective of bond holders because of the way that limited liability limits equity holders' downside losses without limiting their upside returns. As a result, debtholders demand a return that increases with leverage, covenants that limit risk-taking, and accounting transparency. Because the financial safety net renders superfluous the need of creditors of banks to monitor, market mechanisms for limiting risk in banking are attenuated. There is no offset to the additional expected return that banks earn from holding riskier portfolios arising from a higher cost of funds.

Based on the fact that U.S. financial institutions securitized subprime loans and sold them worldwide, the perception exists of a financial crisis made on Wall Street. However, government financial safety nets exacerbated the excessive risk-taking by banks everywhere, not just in the United States. The International Monetary Fund (2008, Table 1.6, 52) reported subprime-related losses for banks almost as large in Europe as in the United States.²² As of March 2008, it estimated that subprime losses for banks in Europe and the United States would amount, respectively, to \$123 billion (with \$80 billion already reported) and \$144 billion (with \$95 billion already reported). In June 2008, the *Financial Times* (Tett 2008) reported, "Of the \$387 billion in credit losses that global banks have reported since the start of 2007, \$200 billion was suffered by European groups and \$166 billion by U.S. banks, according to data from the Institute of International Finance." For example,

²² Not all countries had formal systems of deposit insurance. For example, Switzerland did not have an explicit TBTF policy, but the access of banks like UBS to the discount window of the Swiss National Bank with no policy precluding lending to insolvent banks made UBS appear to be part of a government financial safety net. *Bloomberg Markets* (Baker-Said and Logutenkova 2008, 48–9) reported that the Swiss bank UBS reported losses totaling \$38.2 billion between January 1, 2007, and May 9, 2008, and commented, "To buy the CDOs [collateralized debt obligations], the bank borrowed tens of billions of dollars at low rates...From February 2006 to September '07, the CDO desk amassed a \$50 billion inventory of super senior CDO tranches."

government-owned German banks lost money. The *New York Times* (Clark 2007) reported, “[I]n recent years, WestLB and others, like the Leipzig-based SachsenLB, have grown increasingly aggressive in their investment strategies, hoping to offset weak growth in areas like retail lending with high-yielding bets on asset-backed securities, including many with exposure to subprime mortgages.”

After 2000, the exposure of banks to the real estate market increased significantly. Measured as a percentage of total bank credit, the amount of bank assets held in real estate loans (residential and commercial) remained steady at 30 percent over the decade of the 1990s but then rose steadily after 2000 until reaching just over 40 percent in 2007 (see Figure 2).²³ In 2002:Q2, all real estate loans of FDIC-insured institutions comprised 47.6 percent of loans and leases outstanding.²⁴ In 2008:Q2, the figure had risen to 55.0 percent. The large banks of more than a billion dollars in assets accounted for the increase. They held \$800 billion in residential loans in 2002 and \$1.8 trillion in 2007 (Krainer 2008; see Figure 3).

Bank exposure exceeded these numbers because of holdings of RMBSs (retail mortgage-backed securities) and CDOs (collateralized debt obligations formed with tranches of MBSs) in off-balance-sheet conduits called qualified special purpose vehicles (QSPVs) or structured investment vehicles (SIVs). Although a weakness in the structured-finance model was the lack of incentive for credit analysis on the part of the mortgage originators who sold the mortgages to be packaged into RMBSs, the bank-sponsored QSPVs created the demand for the subprime and Alt-A loans packaged into these bundles.²⁵ Banks set up these entities for two reasons. First, they created a profitable spread between the rates on illiquid RMBSs or CDOs and the rates on the commercial paper used to leverage them. Second, they removed the mortgages from banks’ books to reduce capital charges.²⁶

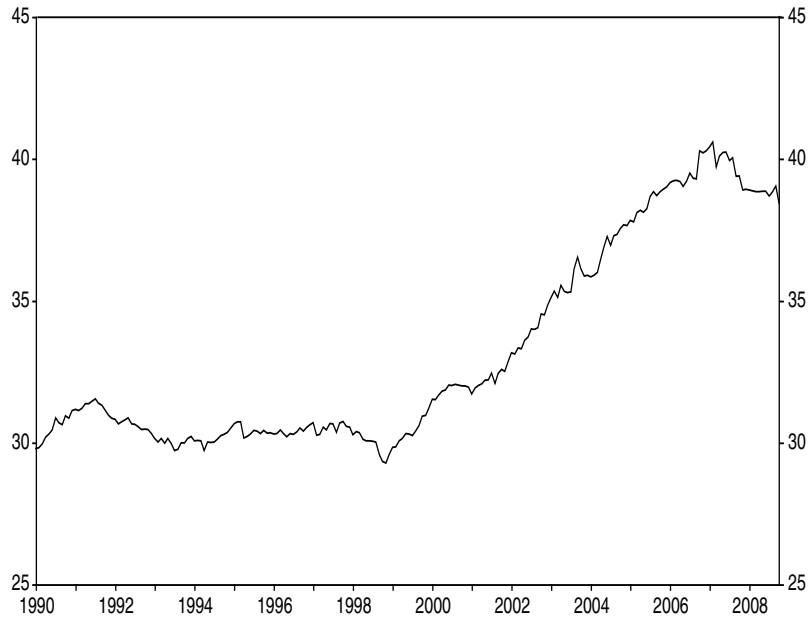
Large commercial banks drove the growth in structured finance after 2003 through the liquidity and credit enhancements that allowed the leveraging of QSPVs with commercial paper. Liquidity enhancements took the form of

²³ See Board of Governors statistical release H.8 (www.federalreserve.gov/releases/h8).

²⁴ See FDIC Call Report, Statistics on Depository Institutions (www2.fdic.gov/sdi/rpt.Financial.asp).

²⁵ The structured mortgage debt held in bank conduits allowed the extension of credit to previously ineligible borrowers through funding of adjustable rate mortgages (ARMs) and option ARMs. In 2002–2003, ARMs constituted 16.5 percent of MBS issuance. From 2004–2006, that figure rose to 43 percent (*Mortgage Strategist* 2007, Table 1.5). Until 2003, sophisticated investors specializing in credit risk had priced subprime MBSs. However, starting in 2004, that due diligence gave way to relying on the prioritization of payment through the tranche structure of securitized debt with senior tranches receiving triple-A ratings (Adelson and Jacob 2008).

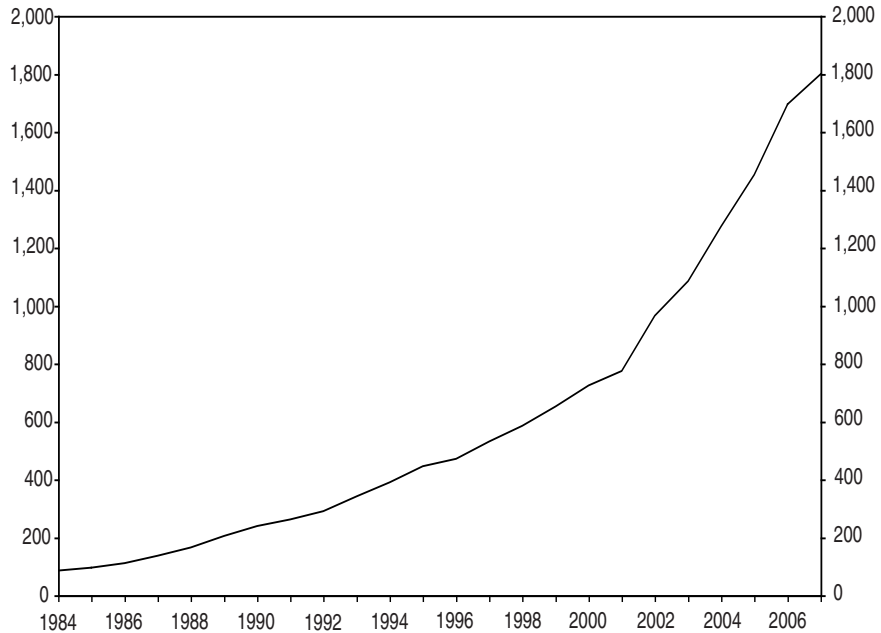
²⁶ In principle, regulators could have required banks to hold additional capital. However, when banks are holding capital above the tier 1 capital level mandated by the Basel Accord and when loss rates are low, regulators are reluctant to force regulations on banks that would place their banks at a competitive disadvantage with foreign banks and other financial institutions.

Figure 2 Mortgage Debt as a Percent of Total Commercial Bank Credit

Source: Federal Reserve Board, Statistical Supplement to the Federal Reserve Bulletin, Tables 1.54 and 1.26. <http://www.federalreserve.gov/releases/h8/>.

guarantees that the bank would extend credit if the commercial paper failed to roll over. Ratings agencies required these guarantees as a condition for rating the paper triple-A.²⁷ Banks incurred the risk by not using the alternative liquidity enhancement provided by issuing extendible paper. Credit enhancements also took the form of bank-held subordinated debt, which is debt junior to the commercial paper. When the commercial paper market became dysfunctional in August 2007, for reputational reasons, large banks continued to

²⁷ “[N]early every [ABCP] program is required by the rating agencies to maintain a back-up liquidity facility (usually provided by a large commercial bank) to ensure funds will be available to repay CP investors at maturity. . . . CDO programs. . . rely on bank liquidity support (usually in the form of a put to the bank) to back-stop 100% of a program CP in the event that the CP can not be rolled” (J.P. Morgan Securities 2007, 1–2). The *Wall Street Journal* (2007b) reported, “Globally, the amount of asset-backed commercial paper is about \$1.3 trillion. Of this asset-backed paper, \$1.1 trillion is backed by funding lines from banks, according to the Merrill report.” Note that these “lines of credit” are not truly lines of credit. A line of credit is a contractual arrangement between a bank and a firm in which covenants protect the bank from landing in case of financial deterioration of the firm (Goodfriend and Lacker 1999). In reality, the off-balance-sheet entities simply had a put on the bank.

Figure 3 Total Residential Loans for Large Commercial Banks

Notes: Total residential loans for banks with assets greater than \$1 billion.

Source: John Krainer, Federal Reserve Bank of San Francisco.

support their QSPVs regardless of formal commitments. That is, they either purchased the commercial paper of these entities to avoid draws on their liquidity facilities or they took the assets back into their own books. They did so to protect their future ability to remain in the securitization business.²⁸

Indicative of the difficulty in monitoring the riskiness of bank portfolios is the lack of information on the amount of securitized mortgages held in the conduits for which the banks retained residual risk. For the three U.S. banks with the largest holdings, in 2003:Q3, the first quarter for which data are

²⁸ The losses incurred by banks in taking the mortgages held in conduits back onto their own books constituted de facto recognition that these conduits amounted to off-balance-sheet financing rather than a genuine sale of assets in which the transferor neither maintains effective control over the assets (a “brain dead” arrangement) nor retains any credit risk (a “bankruptcy remote” arrangement). In recognition of this situation, on April 2, 2008, the Financial Accounting Standards Board met to discuss changes to FAS 140, which governs the securitization of assets. The changes they proposed would eliminate the QSPEs and force banks to take securitized assets back onto their balance sheets.

available, the amount of assets held in off-balance-sheet conduits financed by commercial paper and in which the banks retained explicit residual risk came to \$94 billion. In 2007:Q2, the amount came to \$267 billion.²⁹ On the one hand, these numbers overstate mortgage holdings because they include other assets. However, other data on residential mortgages financing one-to-four single family units held in private mortgage conduits, which do not specify a total for commercial banks, show large increases over this period. The dollar amount of mortgages held in this form were steady at around $\frac{1}{2}$ trillion dollars from the end of the 1990s through January 2003. By mid-2007, this amount had risen to almost $2\frac{1}{4}$ trillion dollars.³⁰ On the other hand, the above numbers for commercial banks understate the mortgages held in bank-created conduits for which banks retained residual risk. Specifically, the totals do not include conduits for which the banks possessed no contractual obligation to provide back-up lines of credit or other credit guarantees, but for which reputational concerns caused the banks to take the assets back onto their own balance sheets after August 2007. Finally, there are no available data for thrifts or for foreign banks.

6. COMMITMENT TO A LIMITED FINANCIAL SAFETY NET

The current assumption of financial regulation is that government does not need an explicit policy with credible commitment with respect to bank bailouts. A term that has been used to describe current policy is “constructive ambiguity.” Although this characterization in principle admits of discretion not to bail out all bank creditors, the prevailing practice of regulators of preventing uninsured depositors and debtholders from incurring losses in the event of a bank or thrift failure limits the monitoring of risk-taking by creditors. At least since the failure of the savings and loans or thrifts (S&Ls) in the 1980s, policymakers and the public have understood the resulting problem of moral hazard.³¹ The subsidy to a financial institution from the financial safety net

²⁹ The banks are Citigroup, J.P. Morgan Chase, and Bank of America. Data are from “Bank Holding Company’s Credit Exposure and Liquidity Commitments to Asset-backed Commercial Paper Conduits, FR Y-9C Call Reports, Schedule HC-S” and can be found at the FFIEC Web site (<https://cdr.ffiec.gov/public/SearchFacsimiles.aspx>). An online search of Form 10-Qs submitted by banks to the SEC revealed practically no information on the extent of liquidity commitments or credit enhancements to SIVs (available on the SEC Web site).

³⁰ See “1.54 Mortgage Debt Outstanding,” Statistical Supplement to the *Federal Reserve Bulletin*, July 2008 (www.federalreserve.gov/pubs/supplement).

³¹ The bailout of the GSEs in summer 2008 created a widespread understanding of the problems of the “GSE model” with its privatization of rewards and socialization of risk. However, with the intensification of the 2008 recession that began in 2008:Q3 and that quickened after the failure of Lehman Brothers in mid-September 2008, governments explicitly extended that model to all financial institutions. Hetzel (2009) argues that this extension of the financial safety net arose out of the mistaken attribution of the intensification of the 2008 recession to dysfunction in financial markets. Instead, the problem was a contractionary monetary shock produced in the

increases with the riskiness of the institution's asset portfolio, with leverage, and with reductions in capital. The assumption has been that government regulation can limit the resulting incentive to risk-taking. However, the regular recurrence of financial crises that involve large banks with portfolios rendered risky by the lack of diversification contradicts this assumption (see Appendix). In practice, government regulation of risk-taking has not substituted for the market regulation that would occur if bank creditors had money at risk.³²

The proposal below for severely restricting the financial safety net and eliminating TBTF depends upon the ability of government to commit credibly to such a policy. Credible commitment to limiting the safety net requires taking the bailout decision out of the hands of regulators. Credible commitment avoids the worst of all outcomes—nonintervention when the market expects intervention as occurred in the summer and fall of 1998 when markets were surprised by the failure of the IMF to bail out Russia and when the Fed failed to bail out Lehman Brothers as it had done with Bear Stearns (Hetzel 2008, Ch. 16, and Hetzel 2009). Although the political system has bailed out private corporations, such bailouts are the exception and they are extremely controversial.³³ A decision by the Secretary of the Treasury to bail out a large bank would require asking Congress for funds. Congressmen would then have to vote explicitly for income transfers that run counter to a long populist tradition distrustful of the concentration of wealth on Wall Street.

The feasibility of the proposal requires a counterfactual of what a financial system would look like with a severely limited safety net. The large amount of funds in government and prime money market mutual funds holding short-term government securities and prime commercial paper is evidence of the extensive demand by investors for debt instruments that are both liquid and

summer of 2008 by a failure of central banks to respond promptly and vigorously to declining economic activity by lowering their interest rate targets.

³² The *Wall Street Journal* (2008a) wrote, "The recent financial blowups came largely not from hedge funds, whose lightly regulated status has preoccupied Washington for years, but from banks watched over by national governments... 'I think it was surprising... that where we had some of the biggest issues in capital markets were with the regulated financial institutions,' said Treasury Secretary Henry Paulson."

The amounts of money involved in the off-budget subsidies created by the financial safety net inevitably leave regulatory decisions open to challenge by the political system. Regulatory limitation of risky investments that are at least initially financially successful is likely limited to extreme cases where regulators have a black and white defense.

³³ A decision to support a troubled bank is a fiscal policy rather than a monetary policy decision, and it appropriately belongs to elected officials (Goodfriend 1994; Hetzel 1997; Hetzel 2008, Ch. 16 "Appendix: Seigniorage and Credit Allocation"). The Constitution requires that "[n]o money shall be drawn from the Treasury, but in consequence of appropriations made by law." This stricture gives content to popular sovereignty by the way in which spending subject to the appropriations process receives public scrutiny. Sprague (1986, 5) wrote: "The four congressionally approved bailouts were for Chrysler Corporation, Lockheed Corporation, New York City, and Conrail... Each was preceded by extensive public debate... The contrast between the publicly discussed congressional bailouts and the behind-the-scenes bank rescues by FDIC has generated a debate that seems destined to continue so long as we have megabanks in the nation that might fail."

safe. In the absence of the safety net, these investors would constitute a huge market for financial institutions marketing themselves as safe because of high capital ratios and a diversified asset portfolio of high grade loans and securities. Effectively, the market would create a parallel narrow banking system. These institutions would constitute a large enough core of run-proof institutions so that in the event of a financial panic creditors would withdraw funds from risky institutions and deposit them in the safe institutions.³⁴ The risky institutions would have to create contracts that did not allow withdrawal on demand. Depositors at the safe banks would earn a low rate of return, but they, not the taxpayer, would then be the ones paying for financial stability.

What about institutions like AIG? Because AIG is an insurance company rather than a bank, it is unclear whether investors had considered it too big to fail. However, its reputation did come from its regular insurance business, which is highly regulated by state governments in the United States and foreign governments abroad. Moreover, the relevant counterfactual for evaluating the activities of its financial products unit is whether the demand for its credit default swap (CDS) insurance, especially by large banks, would have been so significant without the risk-taking incentives created by TBTF. The insurance provided by CDSs allowed large banks in Europe to take risky assets off their balance sheets to avoid capital charges (regulatory arbitrage). The *Wall Street Journal* (2009) reported:

The beneficiaries of the government's bailout of American International Group Inc. include at least two dozen U.S. and foreign financial institutions that have been paid roughly \$50 billion...The insurer generated a sizable business helping European banks lower the amount of regulatory capital required to cushion the losses on pools of assets such as mortgages and corporate debt. It did this by writing swaps that effectively insured those assets...The concern has been that if AIG defaulted banks that made use of the insurer's business to reduce their regulatory capital, most of which were headquartered in Europe, would have been forced to bring \$300 billion of assets back onto their balance sheets...

The alternative to making AIG part of the financial safety net would have been to allow it to file for bankruptcy. Bankruptcy protection could have offered policyholders more assurance that the assets backing their policies were protected. As explained in the *Wall Street Journal* (2008d):

AIG's millions of insurance policyholders appear to be considerably less at risk [than creditors of the parent company]. That's because of

³⁴ Because the safe banks would have an incentive to hold only assets for which they had done due diligence rather than complicated, opaque financial products, their accounting would likely be more persuasive to creditors. "When investors don't have full and honest information, they tend to sell everything, both the good and bad assets," said Janet Tavakoli, president of Tavakoli Structured Finance (Walsh 2008).

how the company is structured and regulated. Its insurance policies are issued by separate subsidiaries of AIG, highly regulated units that have assets available to pay claims. In the U.S., those assets cannot be shifted out of the subsidiaries without regulatory approval, and insurance is also regulated strictly abroad. . . . Where the company is feeling financial pain is at the corporate level, even while its insurance operations are healthy. If a bankruptcy filing did ensue, the insurance subsidiaries could continue to operate while in Chapter 11. . . .

New York state insurance superintendent, Eric R. Dinallo, testified before the House Financial Services Committee, “There would have been solvency” in AIG’s insurance companies “with or without the Federal Reserve’s intervention” (*American Banker* 2009). However, in the absence of a bankruptcy filing, New York insurance regulators allowed AIG to transfer \$20 billion from its subsidiaries to the holding company (Walsh and de la Merced 2008).

The following provides a proposal for restricting the financial safety net. The government must commit not to bailing out the creditors of financial institutions, especially those of large banks. If a bank experiences a run, the chartering regulator must put it into conservatorship.³⁵ Under conservatorship, regulators assume a majority of seats on the bank’s board of directors. The directors then decide whether to sell, liquidate, break up, or rehabilitate the bank. By law, this conservatorship must eliminate the value of equity and impose an immediate haircut on all holders of debt and holders of uninsured deposits. Thereafter, as long as the bank is in conservatorship, the existing deposits and debt are fully insured.

After being placed into conservatorship and after the haircuts imposed on holders of the bank’s debt, the bank could still be insolvent as indicated by a lack of bidders for the bank without government financial assistance. In this event, the regulators would levy a special assessment on banks to recapitalize the failed institution. The specific mechanism would involve an elaboration of the ideas of Calomiris (1989), who examined the criteria that led to successful and unsuccessful state bank insurance programs in the 19th century. The FDIC would divide banks into groups of, say, ten, with the ten largest in one group, the next ten largest in another group, and so on. The individual banks would pay deposit premia into their own fund and would be subject to an assessment to replenish the fund if a bank in their group required FDIC funds after being run and placed into conservatorship.

Each group would have an advisory board that would make recommendations to the FDIC for its group about regulating risk, setting the level of insurance premia, and designing risk-based insurance premia. The FDIC,

³⁵ If there is an immediate need for the equivalent of debtor-in-possession financing after a bank enters conservatorship, the Treasury would supply funds from the Exchange Stabilization Fund or transfer Treasury tax and loan accounts to the bank.

subject to Basel minimums, would set individual group capital standards and other regulations to limit risk-taking. The incentive would then be for banks in a group to lobby the FDIC to prevent excessive risk-taking by the other banks in their group.³⁶ As a check, the public would see the cost of subordinated debt of each group relative to that of the others.

Under this arrangement, because of the relatively small number of banks in the group, banks could feasibly monitor each other for excessive risk-taking and they have an incentive to do so. At the same time, there are too many banks to collude. In the event of a run on a solvent bank, the other banks in the group would possess the information needed to lend to the threatened bank to limit the run just as they did in the pre-Fed clearinghouse era. A demonstrated willingness of banks to support each other would inspire depositor confidence.

Essential to eliminating the ability of government to bail out the creditors of banks is elimination of the legal authority of the Fed to make discount window loans.³⁷ Goodfriend and Lacker (1999) explain the role of the Fed's discount window in the safety net and highlight reasons for the Fed's inability to restrict lending to insolvent banks.³⁸ They predicted increased financial market instability and an extension of discount window lending to nonbank financial intermediaries. In the event of a financial panic, the Fed would flood the market with liquidity by undertaking massive purchases of securities in the open market. It would use its payment of interest on bank reserves to maintain its funds rate target.

In addition to closing the discount window, the Fed would have to limit bank daylight overdrafts to a maximum amount given by prearranged collateral

³⁶ In this way, FDIC deposit insurance would become consistent with the common understanding of insurance in which a fund accumulates assets and the directors of the fund impose constraints on risk-taking to mitigate moral hazard.

³⁷ Goodfriend and King (1988) and Schwartz (1992) advocate closing the discount window. One can make the classic argument for the discretion to allow use of the discount window for other than extremely short-lived liquidity needs. In principle, with its superior information that comes from its supervisory authority, the Fed can do better with discretion because it can distinguish between desirable intervention to offset nonfundamental runs and undesirable intervention to offset fundamental runs. (The distinction comes from Diamond and Dybvig [1983].) However, in practice identifying the difference between such runs is problematic. The assumption that the Fed will not bail out a troubled institution is historically counterfactual.

Historically, bank insolvencies have come at difficult times for monetary policy, especially times of high interest rates. Two examples are the failures of Franklin National in 1974 and Continental Illinois in 1984, both at times of high interest rates. The Fed may be reluctant to use its limited political capital with Congress to close a large bank, instead preferring to conserve it for situations in which raising the funds rate is politically painful.

³⁸ In principle, the Fed could make bank use of its discount window contingent upon meeting loan covenants that limit excessive risk-taking of the sort imposed by at-risk debtholders and by banks on commercial businesses. In reality, government regulators lack this flexibility. They must design an objectively verifiable set of criteria to limit risk that works for all banks and in all situations that exist or could exist. The reason is that they must defend their regulations in the political system and must guard against international regulatory competition in which domestic regulators favor their own banks over foreign banks. In general, regulators are understandably reluctant to allow a bank to fail and eliminate individuals' livelihoods. Inevitably, they will emphasize the possibility of a bank rectifying its problems given a little more time.

posted with it. Because the FHLB system has assumed the lender-of-last-resort function, legislation should abolish it. To limit deposit insurance to include only individuals who are neither wealthy nor financially sophisticated, the FDIC would limit payouts to a maximum amount per year for an individual Social Security number.³⁹ Such a payout limitation would also eliminate the current insurance coverage of brokered CD deposits.⁴⁰

Even with a credible commitment not to bail out banks and without a discount window, the Fed would continue to play a critical role. A lesson from history is that severe financial panics require monetary stringency (see Appendix). The Fed needs to follow a rule that allows the price system to operate to smooth cyclical fluctuations (Hetzel 2009). In the event of a panic, the Fed would engage in massive amounts of open market purchases to assure markets that liquidity will remain available. With its ability to pay interest on reserves, the Fed can now buy unlimited amounts of assets without depressing the funds rate (Goodfriend 2002 and Keister, Martin, and McAndrews 2008).

7. CONCLUDING COMMENT

The monetary and financial arrangements of the United States have only partially been successfully incorporated into the broad constitutional framework of laws that govern property rights. Monetary instability has been a recurrent problem. Financial institutions are not subject to the market discipline of free entry and exit. Monetary and regulatory policies raise difficult issues of public accountability. Because of the ability to make off-budget transfers, monetary policy with seigniorage from money creation and regulatory policy with subsidies from the financial safety net render difficult commitment to explicit policies. The current crisis should prompt a broad public review of the institutional arrangements that assure monetary and financial stability and that promote the continued operation of competitive markets.

³⁹ With the Internet, it has become easy to check on the financial health of a bank. See, for example, the Web site of Institutional Risk Analytics. With the disappearance of the financial safety net, banks would compete for depositors by providing accurate information on their financial health to such Web sites.

⁴⁰ At present, depositors can receive up to \$50 million in deposit insurance by using a broker who divides deposits among many insured banks under a program called Certificate of Deposit Account Registry Service (Mincer 2008).

APPENDIX: HISTORICAL OVERVIEW OF BANK FRAGILITY

The proposal here to limit the financial safety net and to eliminate TBTF raises the issue of systemic instability. In the absence of a financial safety net, could insolvency at one large financial institution create fears of losses at other institutions and thereby initiate a cascading series of runs? Does an inherent fragility in financial markets create the need for a financial safety net combined with government regulation to limit the resulting moral hazard due to the incentive to risk-taking? Any serious answer to this question requires an examination of historical evidence of the phenomenon of bank runs before the establishment of deposit insurance in 1934 and the subsequent expansion of the financial safety net.

Several conclusions follow from the following historical survey. Bank runs did not start capriciously but rather originated with insolvent banks. In the clearinghouse era before the Fed, panics only occurred in the absence of prompt support for solvent banks from the clearinghouse. Unit banking made the U.S. banking system susceptible to shocks. Before deposit insurance, market discipline was effective in closing banks promptly enough to avoid significant losses to depositors. Significant systemic problems occurred, as in the Depression, only against a backdrop of monetary contraction that stressed the banking system. Friedman and Schwartz (1963, 677) summarize the historical instability in U.S. monetary arrangements:

[Prior to World War II] there have been six periods of severe economic contraction. . . . The most severe contraction was the one from 1929 to 1933. The others were 1873–79, 1893–94—or better, perhaps, the whole period 1893 to 1897, . . . 1907–08, 1920–21, and 1937–38. Each of those severe contractions was accompanied by an appreciable decline in the stock of money, the most severe decline accompanying the 1929–33 contraction.

The frequently expressed belief that, historically, bank failures have often started with runs unprovoked by insolvency but rather precipitated by investor herd behavior has encouraged the view that free entry and exit is inappropriate for banks as opposed to nonfinancial businesses. That is, bankruptcy decisions for banks should be determined by regulators rather than through the market discipline imposed by depositors. Concern that free entry encourages fraud and excessive risk-taking goes back to the “free banking systems” common from 1837 to 1865 in which banks could incorporate under state law without a special legislative charter. Rolnick and Weber (1984) and Dwyer (1996), however, showed that “wildcatting,” defined as banks open less than a year, did not account for a significant proportion of bank failures. Moreover, the failures that did occur resulted not from “panics” but rather from well-founded

withdrawals from banks whose assets suffered declines in value because of aggregate disturbances. An example of such a disturbance was the failure in the 1840s of Indiana banks that held the bonds used to finance the canals rendered uneconomic by the advent of the railroad.

Calomiris (1989) compared the success and failure of state-run systems of deposit insurance before the Civil War. Several systems operated successfully to prevent the closing of insured banks through depositor runs. The reason for their success was monitoring among banks to limit risky behavior and assurance to depositors of prompt reimbursement in case of bank failure. Both attributes depended upon a mutual guarantee system among insured banks made credible by an unlimited ability to impose upon member banks whatever assessments were required to cover the costs of reimbursing depositors of failed banks.

The National Banking Era lasted from 1865, when the National Bank Act taxed state bank notes out of existence, until 1913 and the establishment of the Federal Reserve. It included six financial panics defined as instances in which the New York Clearinghouse Association issued loan certificates (Roberds 1995). Although it is difficult to generalize from this period because of a lack of good data, the literature allows the generalization that bank runs started with a shock that produced insolvency among some banks. In summarizing the research of Calomiris and Gorton (1991), Calomiris and Mason (2003, 1616) wrote, “[P]re-Depression panics were moments of temporary confusion about which (of a very small number of banks) were insolvent.” The mechanism for dealing with the forced multiple contractions of credit and deposits in a fractional reserve system caused by reserve outflows—namely, the issuance of clearinghouse certificates to serve as fiat money among banks—generally worked (Timberlake 1984). Elements of the National Banking system such as government control of the amount of bank-note issue and reserve requirements on central-reserve-city banks that immobilized reserves in the event of a bank run increased the fragility of a fractional reserve system in a gold standard. Timberlake (1993, 213) concluded nevertheless that “the clearinghouse institution successfully abated” these monetary rigidities. When, in 1907, the member banks in clearinghouse associations failed to act promptly to suspend convertibility in response to a bank run, runs spread (Roberds 1995, 26). However, as Friedman and Schwartz (1963, 329) wrote, apart from possibly the restriction in bank payments from 1839–1842, there were no “extensive series of bank failures after restriction occurred.”

The panics of 1893 and 1907 are especially interesting because of their relevance to Federal Reserve experience. In the early 1890s, the threat to the gold standard produced by the free silver movement and the resulting export of gold strained the banking system (Friedman and Schwartz 1963, 113–34; Timberlake 1993). “The fear that silver would produce an inflation sufficient to force the United States off the gold standard made it necessary to have

severe deflation in order to stay on the gold standard” (Friedman and Schwartz 1963, 133). A conclusion from the 1893 panic relevant to the Depression is that if monetary policy forces a contraction of the banking system, in the absence of deposit insurance, the existence of a unit banking system will produce failure of individual banks. Calomiris and Gorton (1991) and Bordo, Rockoff, and Redish (1994) attribute the absence of bank panics before 1914 in Canada to nationwide bank branching and the resulting ability to diversify geographically.

The 1907 bank panic is interesting because the precipitating event was the decision by the National Bank of Commerce on October 21, 1907, to stop clearing checks for the Knickerbocker Trust Company. At the time, trusts were to banks as today investment banks are to commercial banks. By forgoing the ability to issue bank notes, trusts could operate like banks by accepting deposits and making loans, especially call loans to the New York Stock Exchange. According to Tallman and Moen (1990), the panic began with deposit withdrawals from Knickerbocker Trust, whose president had reportedly been involved in a scheme to corner the market in the stock of a copper company. Because the trusts were not part of the New York Clearinghouse Association, bankers, led by J.P. Morgan, were initially reluctant to come to their aid.⁴¹ A prior fall in the stock market had also made the trusts vulnerable because of their lending in the call money market (Calomiris and Gorton 1991, 157).

Only on October 26, 1907, did the New York Clearinghouse begin to issue loan certificates to offset reserve outflows. Sprague (1910) “believed that issuing certificates as soon as the crisis struck the trusts would have calmed the market by allowing banks to accommodate their depositors more quickly” (cited in Tallman and Moen 1990, 10). At the same time, stringency existed in the New York money market because of gold outflows to London (Tallman and Moen 1990; Bordo and Wheelock 1998, 53). As a result, a liquidity crisis propagated the initial deposit run into a general panic. Roberds (1995, 26) reviews all the panics during the National Banking Era and attributes the severity of the 1873 and 1907 panics to the provision of liquidity by the New York Clearinghouse only after “a panic was under way.”

Kaufman, Benston, and Goodfriend and King have surveyed the entire experience of bank failures and runs in the United States and have concluded that fragility is not inherent to banking but rather is a consequence of the safety net created for banks.⁴² They point out that from the end of the Civil

⁴¹ As Roberds (1995, 26) documented, the problem originated with the trusts, which lacked access to lines of credit with banks: “The trusts operated under the impression that they could ‘free ride’ on the liquidity-providing services of the banks and the clearinghouses. . . . Only after the panic had revealed the illiquidity of the trusts was there any significant change in the institutional mechanisms for emergency liquidity provision.”

⁴² See Kaufman (1989, 1994), Benston et al. (1986, Ch. 2), Benston and Kaufman (1995), and Goodfriend and King (1988, 16).

War to the end of World War I bank failures were relatively few in number and imposed only small losses because the fear of losses by both shareholders and depositors resulted in significant market discipline, high capital ratios, and prompt closure of troubled banks.⁴³ Even in the 1920s, when bank failures became more common, runs were uncommon and, when they did occur, funds were redeposited in other banks.

When the economy entered into recession in August 1929, Fed policy-makers maintained the discount rate at a level intended to prevent a recurrence of the financial speculation they believed had led to financial collapse and recession. That policy set off a spiral of monetary contraction, deflation, expected deflation, an increased real interest rate, and so on (Hetzel 2008, 17ff; Hetzel 2009). Given the monetary contraction created by monetary policy, bank lending and deposits had to contract. Similarly to 1893, given unit banking, banks had to fail, and they failed through runs. As in the 1920s, “the failure rate was inversely related to bank size” (Mengle 1990, 7). In late 1932 and early 1933, rumors that the incoming Roosevelt administration would devalue the dollar engendered large outflows of gold (Friedman and Schwartz 1963, 332; Wigmore 1987). However, Kaufman (1994, 131) found little evidence in written sources before late 1932 of “concern with nationwide contagion.”⁴⁴

Calomiris and Mason (1997, 2003) investigated whether the waves of Depression-era bank failures before deposit insurance reflected fundamental concerns about banks’ solvency or depositor panic uninformed about bank health. For the specific episode of Chicago bank runs in June 1932, they found that runs reflected genuine solvency concerns and that no solvent banks failed. In particular, Chicago bankers used a line of credit to support Central Republic Bank, which they believed to be solvent, and prevented its failure.⁴⁵ In an

⁴³ In contrast, the FDIC reported losses from failed banks to its Deposit Insurance Fund in 2008 and the first two months of 2009 of almost 25 percent of assets (Adler 2009).

⁴⁴ Friedman and Schwartz (1963) contributed to popular misperceptions about panics and bank fragility. Throughout the period of bank runs from 1930 through early 1933, the monetary base rose. Using a money-multiplier framework, Friedman and Schwartz explained the monetary contraction through a fall in the deposit-currency ratio produced by widespread panicked withdrawals by depositors from the banking system as opposed to withdrawals from individual banks perceived as unsound. For example, with reference to the early 1933 banking crisis, they commented, “Once the panic started, it fed on itself” (Friedman and Schwartz 1963, 332). However, Schwartz (1992, 66) later stated that this “contagion” occurred only because the Fed permitted the money supply to decline. The money-multiplier framework used by Friedman and Schwartz is inappropriate because the Fed targeted money market rates and, as a consequence, accommodated changes in the deposit-currency ratio. The money stock fell in the Depression because the Fed maintained interest rates at too high a level (Hetzel 2008).

Wicker (1996) and Temin (1989) contend that the first two sets of bank failures in 1930 and 1931 did not result from a national panic but rather were confined to specific regions and the insolvent banks within those regions. Calomiris and Mason (2003; 1,616) also challenge the blame that Friedman and Schwartz place on the Fed for the failure of clearinghouses to deal with runs through suspension and certificate creation. Their explanation is that solvent (large) banks were not threatened by the failure of insolvent (small) banks.

⁴⁵ The Reconstruction Finance Corporation lent Central Republic Bank \$90 million. Because the bank’s chairman, Charles “General” Dawes, had been Calvin Coolidge’s vice president, the

investigation of all Fed member bank failures, apart from January and February 1933, Calomiris and Mason (2003; 1,638 and 1,615) found “no evidence that bank failures were induced by a national banking panic. . . . Fundamentals explain bank risk rather well.”

Fischer and Golembe (1976) and Flood (1992) examined the politics of the 1933 and 1935 Banking Acts, which created deposit insurance. Roosevelt, as well as many bankers and congressmen, opposed deposit insurance on the grounds of moral hazard. They feared that well-managed banks would have to subsidize mismanaged, risk-taking banks. However, at the time, the alternative to deposit insurance offered to restore stability to the banking system was nationwide branch banking, which would have favored large urban banks to the detriment of small country banks. Not only did that alternative run into the long-standing populist hostility to large money-center banks and the opposition of small community banks to competition from branching (Mengle 1990, 6), but it seemed to reward the bankers held responsible for creating the Depression. That is, a common explanation of the Depression was that through correspondent balances the large New York banks had drained funds away from the small banks and had used those funds to promote speculative excess on the stock exchange. The collapse of that speculation supposedly led to the Depression.

This political animus toward large banks not only doomed branch banking but also resulted in the separation of commercial banking and investment banking in the Banking Act of 1933 (Glass-Steagall). Because depositors running banks were taking their money out of small banks and redepositing it in large banks, deposit insurance favored small banks. In return for accepting deposit insurance, large banks received both the prohibition of payment of interest on demand deposits including the correspondent deposits small banks held with them and Regulation Q (Reg Q), which imposed price-fixing ceilings on the payment of interest on savings deposits (Haywood and Linke 1968; Kaufman and Wallison 2001).

The Banking Act contained provisions designed to limit moral hazard in the form of restrictions on bank entry and insurance coverage restricted only to depositors with small balances. Flood (1992) argues that erosion of these safeguards led to the banking problems of the 1980s. After the enactment of

bank was known as a Republican bank. House Speaker John Nance Garner, Roosevelt's choice for vice-presidential running mate and a Texas Democrat, declared in a congressional debate, “I plead with you to let all the people have some drippings. . . . How can you say that it is more important in this nation that the New York Central Railroad should meet the interest on its bonds. . . . than it is to prevent the forced sale of 500,000 farms and homes?” Garner persuaded Congress to insert language in Section 13(3) of the Federal Reserve Act that allowed the Fed to lend money to nonbanks “in unusual and exigent circumstances” (see Reynolds 2008). As detailed in Schwartz (1992) and Fettig (2002), this language has survived in Section 13(3), which permits the Fed to lend to “individuals, partnerships, and corporations.” Ironically, this authority, which began as populist legislation, became the basis for rescuing Bear Stearns and AIG creditors.

deposit insurance and, continuing through the early 1970s, strict unit banking and restrictive entry ensured high net worth for individual banks by limiting competition. High net worth militated against the moral hazard of the safety net, that is, asset bets large enough to place taxpayers at risk. However, technological advances in the 1970s, for example, automatic teller machines and computerized recordkeeping that made possible money market mutual funds, effectively ended the ability of regulators to limit entry into the financial intermediation industry. As a result, from the early 1960s through the early 1980s, capital-to-asset ratios (measured by market values) for the 15 largest bank holding companies fell from about 13 percent to 2 percent (Keeley 1990). The recurrent crises in the financial system since 1980 are consistent with financial system fragility produced by the incentives of the social safety net to risk-taking, especially from the concentration of bank portfolios in risky assets.

The remainder of this section reviews these crises. Although the most recent shock to the banking system, namely, the decline nationwide in housing prices, was unprecedented, each of the crises recapitulated below also resulted from an unprecedented shock. The occurrence of aggregate shocks is not unprecedented. Each shock interacted with a lack of portfolio diversification in bank asset portfolios to threaten the stability of banks with undiversified portfolios. Financial fragility did not result from runs on solvent banks.

The term “moral hazard” became common with the S&L bailout incorporated into the Financial Institutions Reform, Recovery, and Enforcement Act in 1989. The effort by government to subsidize housing off-budget began seriously in 1966 with the extension of Reg Q to S&Ls. To guarantee cheap credit to S&Ls, which by law had to specialize in housing finance, regulators kept Reg Q ceilings on their deposits at below-market interest rates. To assure S&Ls a steady supply of credit, regulators also maintained Reg Q ceilings on bank deposits at a lower level than on S&Ls. Starting with the increase in interest rates in 1969, these ceilings exacerbated cyclical instability in housing construction by causing disintermediation of deposits at S&Ls (Hetzel 2008, Ch. 12; Mertens 2008). This policy of allocating cheap credit to S&Ls collapsed in the late 1970s. When market interest rates rose above the Reg Q ceiling rates on S&L deposits, holders of these deposits transferred their funds to the growing money market mutual fund industry. By offering deposits payable on demand and issuing long-term mortgages, S&Ls had borrowed short and lent long. This maturity mismatch rendered them insolvent when short-term rates rose above the fixed rates on their mortgages. Regulatory forbearance then led the S&Ls to engage in risky lending in an attempt to regain solvency.⁴⁶

⁴⁶ On S&L failures, see Kane (1989); Dotsey and Kuprianov (1990); Woodward (1990); and Hetzel (2008, Ch. 12).

In 1970, the government created Freddie Mac and expanded the activities of Fannie Mae in order to maintain the flow of funds to housing without having to raise Reg Q ceilings. Following a pattern of raising deposit insurance limits at times of interest rate peaks and S&L disintermediation, in 1980, in the Depository Institutions and Deregulation Act, Congress expanded the S&L subsidy by raising deposit insurance ceilings from \$40,000 to \$100,000 (Hetzel 1991, 9). Because CDs of \$100,000 or more were not subject to interest-rate ceilings, S&Ls, regardless of their financial health, gained unlimited access to the national money market basically at government risk-free rates. Insolvent S&Ls then “gambled for resurrection” through risky lending. Deposit insurance for their liabilities encouraged this risk-taking because the government bore the losses while the S&Ls reaped the gains. The cost of bailing out the S&Ls came to \$130 billion (U.S. General Accounting Office 1996, 14). The proximate cause of the thrift industry insolvency, high peacetime inflation, was unprecedented.

In the 1970s, large money-center banks exploited low, short-term real interest rates to buy illiquid, long-term debt of South American countries. When interest rates rose in the early 1980s, these countries threatened to default on their debt. The debts of the LDCs owed to the nine largest money center banks amounted to twice the size of these banks’ capital (Volcker 1983, 84). The cause of the LDC debt crisis—the threat of widespread sovereign debt defaults—was unprecedented.

In the late 1980s, banks in Texas concentrated their lending in oil and gas partnerships and in real estate development. When oil prices declined, all the big banks (Republic Bank, InterFirst Bank, First National City Bank, and Texas Commerce Bank) failed with many being purchased by out-of-state banks. More generally, in the late 1980s, pushed by competition for the financing of business loans coming from the commercial paper market, large banks engaged in significant amounts of undiversified real estate lending (Hetzel 1991). Because of TBTF, they could do so with low capital ratios (Boyd and Gertler 1994). In 1988, when the real estate market soured, assets at failed banks jumped to above \$150 billion (Dash 2008) and, by 1992, 863 banks with total assets of \$464 billion were on the FDIC’s list of problem institutions (Boyd and Gertler 1994, 2). The aggregate shock, namely, declines in house prices in New England, Texas, and California, was unprecedented.⁴⁷ The Fed kept insolvent banks alive through its discount window.⁴⁸ In response, Congress passed the Federal Deposit Insurance Corporation Insurance Act

⁴⁷ In both California and Massachusetts, real house prices peaked toward the end of the 1980s and then fell 30 percent over the next seven years. Real house prices are measured by the OFHEO House Price Index deflated by the CPI, less shelter (Wolman and Stilwell 2008).

⁴⁸ Of the 418 banks that borrowed from the discount window for an extended period, 90 percent ultimately failed (U.S. Congress 1991).

(FDICIA) with the intent of forcing regulators to close banks before they became insolvent.

The next episode of financial instability occurred with the Asia and Russia crisis that began in the summer of 1997.⁴⁹ In early 1995, the Treasury, with the Exchange Stabilization Fund; the Fed, with swap accounts; and the IMF had bailed out international investors holding Mexican Tesobonos (Mexican government debt denominated in dollars) who were fleeing a Mexico rendered unstable by political turmoil. That bailout created the assumption that the United States would intervene to prevent financial collapse in its strategic allies. Russia was included as “too nuclear” to fail. Subsequently, large banks increased dramatically their short-term lending to Indonesia, Malaysia, Thailand, and South Korea. The Asia crisis emerged when the overvalued, pegged exchange rates of these countries collapsed, revealing an insolvent banking system. Because of the size of the insolvencies as a fraction of the affected countries GDP, the prevailing TBTF assumption that Asian countries would bail out their banking systems suddenly disappeared. Western banks had not done due diligence in their lending under the assumption that in a financial crisis the combination of short-term maturities and IMF money would assure a quick, safe exit. They abruptly ceased lending (Hetzel 2008, Ch. 16). The fundamental aggregate shock—the emergence of China as an export powerhouse that reduced the competitiveness of the Asian Tigers and rendered their exchange rates overvalued—was unprecedented.

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⁴⁹ See Hetzel (2008, Ch. 16) for an account of this period.

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