PHILLIP SWAGEL
Georgetown University

The Financial Crisis: An Inside View

ABSTRACT This paper reviews the policy response to the 2007–09 financial crisis from the perspective of a senior Treasury official at the time. Government agencies faced severe constraints in addressing the crisis: lack of legal authority for potentially helpful financial stabilization measures, a Congress reluctant to grant such authority, and the need to act quickly in the midst of a market panic. Treasury officials recognized the dangers arising from mounting foreclosures and worked to facilitate limited mortgage modifications, but going further was politically unacceptable because public funds would have gone to some irresponsible borrowers. The suddenness of Bear Stearns' collapse in March 2008 made rescue necessary and led to preparation of emergency options should conditions worsen. The Treasury saw Fannie Mae and Freddie Mac's rescue that summer as necessary to calm markets, despite the moral hazard created. After Lehman Brothers failed in September, the Treasury genuinely intended to buy illiquid securities from troubled institutions but turned to capital injections as the crisis deepened.

This paper reviews the events associated with the credit market disruption that began in August 2007 and developed into a full-blown crisis in the fall of 2008. This is necessarily an incomplete history: events continued to unfold as I was writing it, in the months immediately after I left the Treasury, where I served as assistant secretary for economic policy from December 2006 to the end of the George W. Bush administration on January 20, 2009. It is also necessarily a selective one: the focus is on key decisions made at the Treasury with respect to housing and financial markets policies, and on the constraints faced by decisionmakers at the Treasury and other agencies over this period. I examine broad policy matters and economic decisions but do not go into the financial details of specific transactions, such as those involving the government-sponsored enterprises (GSEs) and the rescue of the American International Group (AIG) insurance company.

I first explain some constraints on the policy process—legal, political, and otherwise—that were perhaps not readily apparent to outsiders such as academic economists or financial market participants. These constraints ruled out several policy approaches that might have appeared attractive in principle, such as forcing lenders to troubled firms to swap their bonds for equity. I then proceed with a chronological discussion, starting with preparations taken at the Treasury in 2006 and moving on to policy proposals considered in the wake of the August 2007 lockup of the asset-backed commercial paper market.

The main development following the events of August was a new focus on housing and in particular on foreclosure prevention, embodied in the Hope Now Alliance. The Treasury sought to have mortgage servicers (the firms that collect monthly payments on behalf of lenders) make economic decisions with respect to loan modifications—to modify loans when this was less costly than foreclosure. This approach involved no expenditure of public money, and it focused on borrowers who could avoid foreclosure through a moderate reduction in their monthly mortgage payment. People whose mortgage balance far exceeded the value of their home—so-called deeply underwater borrowers—would still have an incentive to walk away and allow their lender to foreclose.

But political constraints bound tightly in addressing this situation, since there was little appetite in Congress for a program that would transparently reward "irresponsible" borrowers who had purchased homes they could never have hoped to afford. Even after the October 2008 enactment of the Emergency Economic Stabilization Act of 2008 (EESA) gave the Treasury the resources and authority to put public money into foreclosure avoidance, the need to husband limited resources against worsening financial sector problems ruled out undertaking a foreclosure avoidance program at the necessary scale until after the change in administrations in January 2009. The foreclosure avoidance initiative eventually implemented by the Obama administration in March 2009, which took the form of an interest rate subsidy, was a refinement of a proposal developed at the Treasury in October 2007.

Returning to events on Wall Street, the paper picks up the chronology with the failure of Bear Stearns in early 2008, the rescue of the government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac that summer, and the failures of the investment bank Lehman Brothers and AIG the week of September 14, 2008. The run on money market mutual funds in the wake of Lehman's collapse led to a lockup of the commercial paper market and spurred the Treasury to seek from Congress a $700 billion fund—the Troubled Assets Relief Program (TARP)—with which to purchase illiquid assets from banks in order to alleviate uncertainty about financial institutions' viability and restore market confidence. However, as market conditions continued to deteriorate even after the early-October enactment of EESA, the Treasury shifted from asset purchases to capital injections directly into banks, including the surviving large investment banks that had either become bank holding companies or merged with other banks. The capital injections, together with a Federal Deposit Insurance Corporation (FDIC) program to guarantee bank debt, eventually helped foster financial sector stability. Even in late 2008, however, continued market doubts about the financial condition of Citigroup and Bank of America led the Treasury and the Fed to jointly provide additional capital and "ring fence" insurance for some of the assets on these firms' balance sheets. In effect, providing insurance through nonrecourse financing from the Fed meant that taxpayers owned much of the downside of these firms' illiquid assets.

The paper concludes with a brief discussion of several key lessons of the events of the fall of 2008. An essential insight regarding the policies undertaken throughout the fall is that providing insurance through nonrecourse financing is economically similar to buying assets—indeed, underpricing insurance is akin to overpaying for assets. But insurance is much less transparent than either asset purchases or capital injections, and therefore politically preferable as a means of providing subsidies to financial market participants. A second lesson is that maintaining public support is essential to allowing these transfers to take place. These two lessons appear to have informed the policies put into place in the first part of 2009.

I. Constraints on the Policy Process

Legal constraints were omnipresent throughout the crisis, since the Treasury and other government agencies such as the Fed necessarily operate within existing legal authorities. Given these constraints, some steps that are attractive in principle turn out to be impractical in reality, two key examples being the notion of forcing investors to enter into debt-for-equity swaps to address debt overhangs, and that of forcing banks to accept government capital. These both run hard afoul of the constraint that there is no legal mechanism to make them happen. A lesson for academics is that any time they use the verb "force" (as in "The policy should be to force banks to do X or Y"), the next sentence should set forth the section of the U.S. legal code that allows that course of action. Otherwise the policy suggestion is of theoretical but not practical interest. Legal constraints bound in other ways as well, including with respect to modifications of loans.

New legal authorities can be obtained through legislative action, but this runs hard into the political constraint: getting a bill through Congress is much easier said than done. This difficulty was especially salient in 2007 and 2008, the first two years after both chambers of Congress switched from Republican to Democratic leadership. A distrustful relationship between the congressional leadership and President Bush and his White House staff made 2007 an unconstructive year from the perspective of economic policy, although, ironically, it had the effect of making possible the rapid enactment of the early-2008 stimulus: Democratic leaders by then appeared to be eager to demonstrate that they could govern effectively. More legislative actions were taken in 2008 as the credit crisis worsened and the economy slowed, but political constraints remained a constant factor in the administration's deliberations.

Political constraints were an important factor in the reluctance at the Treasury to put forward proposals to address the credit crisis early in 2008. The options that later turned into the TARP were first written down at the Treasury in March 2008: buy assets, insure them, inject capital into financial institutions, or massively expand federally guaranteed mortgage refinance programs to improve asset performance from the bottom up. But we at the Treasury saw little prospect of getting legislative approval for any of these steps, including a massive program to avoid foreclosures. Legislative action would be possible only when Treasury Secretary Henry Paulson and Federal Reserve Chairman Ben Bernanke could go to Congress and attest that the crisis was at the doorstep, even though by then it could well be too late to head it off.

Political constraints also affected the types of legislative authorities that could be requested in the first place, notably with regard to the initial conception of the TARP. Secretary Paulson truly meant to acquire troubled assets in order to stabilize the financial system when he and Chairman Bernanke met with congressional leaders on Thursday, September 18, 2008, to request a $700 billion fund for that purpose. One criticism of the initial "Paulson plan" is that it would have been better to inject capital into the system in the first place, since the banking system was undercapitalized, and asset purchases inject capital only to the extent that too high a price is paid. But Congress would never have approved a proposal to inject capital. House Republicans would have balked at voting to allow the government to buy a large chunk of the banking system, and Democrats would not have voted for such an unpopular bill without a reasonable number of Republican votes to provide political cover.

A final constraint was simply time. Decisions had to be made rapidly in the context of a continuous cascade of market events. Certainly this was the case by the week of September 14, 2008, when Lehman Brothers and AIG both failed; a major money market mutual fund, the Reserve Fund, "broke the buck," allowing its value per share to fall below the $1 par level; a panicked flight from money market mutual funds ensued; and then the commercial paper market locked up, with major industrial companies that relied on commercial paper issuance telling the Treasury that they faced imminent liquidity problems. This was the situation in which the TARP was proposed, and the decisions and actions surrounding its creation must be understood in the context of the events of that week. Time constraints meant that sometimes blunt actions were taken, notably the guarantees on the liabilities of AIG, of money market mutual funds, and several weeks later of banks' qualified new senior debt issues. A blanket guarantee is certainly not a preferred policy approach, but in the face of broad runs on the financial system, guarantees were needed to deal with the problems in real time.

Other impediments to decisionmaking were self-imposed hurdles rather than external constraints. Notable among these was chronic disorganization within the Treasury itself, a broadly haphazard policy process within the administration, and sometimes strained relations between the Treasury and White House staff that made it difficult to harness the full energies of the administration in a common direction. To many observers, the Treasury also lacked an appreciation that the rationales behind its actions and decisions were not being explained in sufficient detail; without understanding the motivation for each decision, outside observers found it difficult to anticipate what further steps would be taken as events unfolded. Part of the problem was simply the difficulty of keeping up, of providing adequate explanation in real time as decisions were being made rapidly, while another part was a lack of trust in the Treasury and the administration. Many journalists and other observers did not believe simple (and truthful) explanations for actions. For example, the switch from asset purchases to capital injections really was a response to market developments. It was too easy—and wrong—to believe that Secretary Paulson was looking out for the interests of Wall Street, or even of a particular firm, rather than the interests of the nation as he saw them. Whatever the reason, such communication gaps led to natural skepticism as the Treasury's approach to the crisis evolved in the fall. There were valid reasons behind the initial plan to purchase assets (even if many people found them inadequate), and valid reasons for the switch to capital injections. But the insufficient explanations of these moves led to skepticism and growing hostility in Congress and beyond to the rescue plan as a whole.

Notwithstanding these criticisms with regard to the Treasury, a paper such as this will inevitably be seen as defensive, if not outright self-serving. Since this is unavoidable, I simply acknowledge it up front. Other accounts of the credit crisis will come out in due course and can be correlated with the discussion here.

II. On the Verge of Crisis

Secretary Paulson, on his arrival at the Treasury in summer 2006, told Treasury staff that it was time to prepare for a financial system challenge. As he put it, credit market conditions had been so easy for so long that many market participants were not prepared for a financial shock with systemic implications. His frame of reference was the market dislocations of 1998 following the Russian debt default and the collapse of the hedge fund Long Term Capital Management (LTCM). Starting that summer, Treasury staff worked to identify potential financial market challenges and policy responses, both in the near term and over the horizon. The longer-range policy discussions eventually turned into the March 2008 Treasury Blueprint for a Modernized Financial Regulatory Structure. Possible near-term situations that were considered included sudden exogenous crises such as terror attacks, natural disasters, or massive power blackouts; market-driven events such as the failure of a major financial institution, a large sovereign default, or huge losses at hedge funds; as well as slower-moving macroeconomic developments such as an energy price shock, a prolonged economic downturn that sparked wholesale corporate bankruptcies, or a large and disorderly movement in the exchange value of the dollar. These problems were not seen as imminent in mid- to late 2006.

The focus at the Treasury was on risk mitigation beforehand and on preparing broad outlines of appropriate responses in the event that a crisis did develop, always recognizing that the details would vary with the situation. To help ensure smooth teamwork in the event of a problem, Secretary Paulson reinvigorated the President's Working Group on Financial Markets (PWG), which had been formed after the October 1987 stock market crash. The PWG brought together senior officials from the Treasury, the Fed, the Securities and Exchange Commission (SEC), and the Commodities Futures Trading Commission (CFTC) to discuss financial and economic developments and potential problems. The heads of these agencies met regularly to discuss market developments, and interaction at the staff level was both frequent and routine. Secretary Paulson also talked regularly in both public and private settings about the need for financial institutions to prepare for an end to abnormally loose financial conditions.

Treasury staff recognized that changes in financial markets since 1998 would affect the contours of any new financial crisis and the policy response. These developments generally had positive impacts in that they contributed to increased financial market efficiency, but they often increased complexity as well. Such developments included

—*Deeper international capital market integration.* Tighter linkages between financial markets in different countries lowered financing costs for U.S. borrowers, given the low national saving rate and the need to import capital to fund spending. But under some views of the international financial architecture, capital market integration also contributed to the housing bubble that helped precipitate the crisis.

—*The rise of securitization.* Financial assets of all types, including credit card debt, auto loans, and residential and commercial mortgages, were increasingly being packaged into ever more complex securities. Securitization reduced finance costs and contributed to stronger aggregate demand; it also allowed the risks of lending to be diversified more widely across market participants than if the loans had remained on bank balance sheets. These benefits, however, came with the downsides of increased complexity and diminished transparency. When problems with mortgage performance did emerge, the bundling of mortgages into securities made it difficult to gauge the distribution and magnitude of credit losses.

—*The growth of private pools of capital.* Hedge funds and private equity firms were becoming increasingly important players. The rise of these nontraditional asset managers should in general increase the efficiency of financial markets: the presence in the market of asset management approaches that include both long and short positions rather than just long would be expected to improve liquidity and efficiency. But these funds tend to be nontransparent; indeed, calls for increased disclosure of their trading positions are at odds with the hedge fund business model. Particularly in Europe, hedge funds were seen as the source of the next financial markets crisis. In the event, many hedge funds suffered massive losses in 2007 and 2008, and their deleveraging certainly contributed to the downward spiral in asset markets. But hedge funds do not appear to have been the fundamental source of the problem.

—*The growth of financial derivatives.* New financial instruments such as credit default swaps increased financial market efficiency by allowing market participants to better hedge the risks of underlying assets such as commodities, bonds, equities, or currencies. But these derivatives added complexity and reduced transparency and further facilitated increased leverage. By September 2008, worsening performance of securitized housing assets such as mortgage-backed securities (MBSs) led to rapid and massive deterioration of the balance sheets of firms such as AIG and Lehman. Derivatives also led to increased interconnectedness of markets, as the over-the-counter nature of credit default swaps and many repo (repurchase agreement) transactions meant that difficulties at financial institutions such as Bear Stearns, Lehman, and AIG could have broad impacts through their role as counterparties to these transactions. These considerations were to play important roles in decisions made throughout 2008 regarding the deployment of public funds to "bail out" particular institutions.

Broadly speaking, these financial innovations were viewed at Treasury as fundamentally a good thing in that they added to the liquidity and efficiency of capital markets and made it easier for firms and investors to lay off risk. Even so, the concern was that it was not clear how the evolving financial system would perform under stress. Under Secretary of the Treasury for Domestic Finance Robert Steel talked to Treasury staff about the challenge of trying to figure out in advance how correlations between asset classes would change in a crisis. He pointed out that before the terror attacks of September 11, 2001, a reasonable way to diversify a real estate portfolio would have been to invest in high-rise office buildings in different cities, but that the returns on these investments suddenly became correlated in the wake of the attacks. The same would be likely to happen in a time of financial crisis: financial structures that had worked before would break down in unexpected ways.

Finally, Secretary Paulson and Under Secretary Steel tried hard in the fall of 2006, but did not succeed, in getting a reform bill through Congress that would give the GSEs' regulator, the Office of Federal Housing Enterprise Oversight (OFHEO), more power to limit the activities of the two major GSEs, Fannie Mae and Freddie Mac. The push on this issue came over opposition from some White House staff, who took the reasonable position that no deal on GSEs was better than one that appeared to strengthen these firms' implicit government backing without fully empowering their regulator.

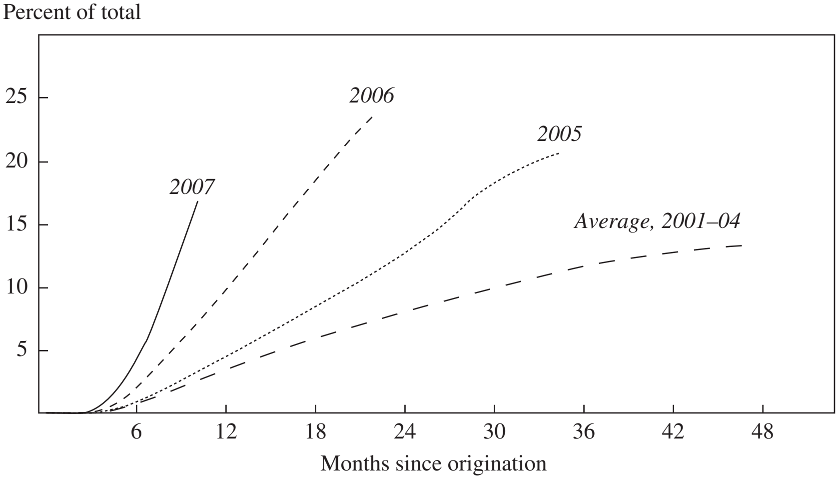
My own introduction to the building credit bubble came at a talk I gave early in 2007 to a group of financial industry participants in commercial real estate—the firms that build, fund, and invest in office buildings, factories, shopping centers, and apartments. Participants told me that there was such incredible liquidity in the market that any project that could be dreamed up could be financed. Although this talk was alarming, economic indicators seemed to back it up: GDP growth had slowed in the second half of 2006 but looked to be strong again in 2007 (as it proved to be in the middle two quarters of the year), and the labor market upswing that had taken hold in mid-2003 remained in force. Indeed, Secretary Paulson's public message was that growth had been unsustainably strong and that it would be no surprise to have a period of slower growth as the economy settled into a more normal pattern.

By early 2007 we at the Treasury were well aware of the looming problems in housing, especially among subprime borrowers as foreclosure rates increased and subprime mortgage originators such as New Century went out of business. Under Secretary Steel took the lead in organizing a series of interagency meetings to discuss the situation. As part of this, he asked for forward-looking analysis on housing prices, home sales and starts, and foreclosure rates—how bad would it get and what would be the economic implications? Economists at the Treasury and the Fed separately did empirical work relating foreclosures to economic conditions such as the unemployment rate, housing prices, and past foreclosure rates. (The Fed work looked at a panel of pooled state data; the Treasury's approach was a time-series model, looking at the nation as a whole and at key states with high or rising foreclosure rates: the Midwest, the Gulf Coast, and bubble states such as California and Florida.) At the Treasury, we then used Blue Chip forecasts for future economic data and ran a dynamic forecast of future foreclosures. The prediction we made at an interagency meeting in May 2007 was that foreclosure starts would remain elevated and the inventory of foreclosed homes would continue to build throughout 2007, but that the foreclosure problem would subside after a peak in 2008.

What we at the Treasury missed was that our regressions did not use information on the quality of the underwriting of subprime mortgages in 2005, 2006, and 2007. This was something pointed out by staff from the FDIC, who had already (correctly) reported that the situation in housing was bad and getting worse and would have important implications for the banking system and the broader economy.

As shown in figure 1, which is from the Fed's July 2008 *Monetary Policy Report to the Congress,* default rates on subprime adjustable-rate mortgages (ARMs) originated in 2005, 2006, and early 2007 were substantially higher than in previous years, and the defaults were coming quickly, within months of origination. The problems were baked into the mortgage at origination in a way that they had not been before 2005; they were not a

Figure 1. Cumulative Defaults on Subprime 2/28 Loans, by Year of Origination, 2001–07[a]



Sources: Federal Reserve, *Monetary Policy Report to the Congress,* July 2008, p. 5.
a. Monthly data; data for 2005–07 are incomplete. A 2/28 loan is a 30-year loan with a low fixed rate for the first 2 years and an adjustable rate for the remaining 28.

function of the cooling economy, except in the sense that the end of easy mortgage terms and the reversal of home price gains removed the possibility of refinancing for subprime borrowers. It is interesting to note as well that the default rates in figure 1 do not have an inflection point upward at the 24-month mark, when the interest rate typically adjusts upward in a "reset." There was, however, a marked propensity for borrowers to refinance at the reset date. These facts further indicated that the problem in the 2005–07 loans was the initial underwriting, not the interest rate reset. It was not that these borrowers could not afford the higher interest rate after the reset—the rapid defaults suggested that borrowers could not afford the initial home payment, or perhaps (rationally) did not want to keep paying the monthly bill once the value of their home had declined below their mortgage balance.

III. August 2007: The Vacation of the Blackberry

The initial moment for an urgent Treasury-wide response came in August 2007, when asset-backed commercial paper markets seized up as investors grew skeptical about the business model of banks' off-balance-sheet structured investment vehicles (SIVs), which relied on short-term funding to finance longer-term assets. Many Treasury officials, including myself, were not in Washington when this crisis broke. I was in Rehoboth Beach, Delaware, where up and down the boardwalk one could see as many Blackberrys being toted around as tubes of suntan lotion.

Many papers have since examined the economic and financial factors that led to the crisis; Markus Brunnermeier (2009) provides a discussion. Within the Treasury, the financial market disruption was seen as the aftermath of twin credit and housing bubbles, with repricing of risk across asset classes and consequent deleveraging across financial institutions coming about as information on the poor underwriting quality in the past several years became more widely understood (this is discussed in detail by Gorton 2008), and as several financial institutions announced dismal results reflecting losses from subprime lending.

Two main policy proposals aimed at calming the financial markets emerged from the August episode: the so-called Master Liquidity Enhancement Conduit (MLEC), or "Super SIV," a common vehicle in which banks would hold their illiquid assets, and a mortgage information database that would provide individual loan-level information on the quality of underwriting and subsequent performance of mortgages, and thereby facilitate analysis of complex MBSs and their derivatives. Neither of these efforts came to fruition, although the American Securitization Forum (ASF) independently began to work on a mortgage database under the rubric of their "Project Restart." A byproduct of the August credit meltdown that did come to fruition was the formation of the Hope Now Alliance aimed at reducing foreclosures. This is discussed further below.

The idea behind the mortgage information database was to directly address the lack of transparency and information behind the August lockup of the markets for asset-backed securities. A database could be organized to provide market participants with loan-level information on mortgage origination and ongoing performance. The data would be anonymously tagged with an identification number akin to a CUSIP on a security. This could be done on a forward-looking basis for new mortgages as they were securitized into MBSs, or on a backward-looking basis for existing MBSs. The latter would be much more difficult: servicers were already overwhelmed by the volume of loan modification requests and did not want to be diverted by a backward-looking project. Investors could use the information in the database to analyze the performance of MBSs and collateralized debt obligations (CDOs) containing the mortgages, allowing analysis to pierce the complexity of these arrangements (as I put it in a speech in February

2008). Ultimately, the database would allow investors to assess the performance of mortgages originated by particular firms or even particular loan officers. This would create a “reputational tail” so that originators would have a connection to the future performance of mortgages even after they had been offloaded from their books through securitization. This reputational tail could be a less intrusive alternative to the suggestion that lenders be required to keep a piece of any loans they originate—that they have “skin in the game.” A database could also help overcome the informational problem posed by second liens, which are often not visible to the servicer of the first mortgage and pose an obstacle to loan modification. What was surprising was that this database did not exist already—that investors in MBSs had not demanded the information from the beginning.

With the freeze of the asset-backed commercial paper market leaving assets stuck in banks’ SIVs, officials in the Treasury’s Office of Domestic Finance developed the MLEC plan as a temporary “bridge” structure to give participating institutions time to reprice and reassess risk. The idea was that the value of the complex securities held by bank SIVs was not well understood and that it would be useful for institutions to hold their illiquid assets in a common pool until there was more clarity on performance. An orderly disposal of the illiquid assets, it was thought, would avoid banks having to sell off assets into a thin market at fire-sale prices. Under the MLEC proposal, banks would have agreed on a multilateral pricing mechanism for the illiquid assets and taken pro rata shares of a common pool, which would have then turned into something close to a buy-and-hold investment vehicle, with the intent being to unwind the portfolio as markets stabilized. The MLEC concept implicitly rested on the assumption that trading had ground to a halt because uncertainty about asset performance gave rise to a liquidity premium. The metaphor of choice was “mad cow disease”: investors could not tell which asset-backed securities were toxic, so they chose not to touch any of them. MLEC would have provided a breathing space under which conditions would return to some new “normal” (not a new bubble), and bid-ask spreads would have narrowed and trading naturally resumed. Of course, such a pause is of little use if the problem is fundamentally one of insufficient capital, not liquidity—as turned out to be the case.

Officials in the Office of Domestic Finance brought together market participants at a Sunday meeting at the Treasury to discuss MLEC. The meeting and the whole MLEC concept were something of a mystery to many Treasury senior staff—including me. MLEC was seen within the Treasury and portrayed to the world as a private sector solution. Some doubtful banks, however, saw it as something being forced on them; indeed, a number of economists at investment banks wondered if the supposed utility of the idea in the first place rested upon a violation of the Modigliani-Miller theorem (meaning that they did not see the utility). MLEC never got off the ground; in the end, banks preferred to take the SIV assets back onto their balance sheets—thus demonstrating the tenuous nature of the off-balance-sheet treatment in the first place. When the banks in the end chose to deal with the problem on their own, the MLEC episode looked to the world, and to many within the Treasury, like a basketball player going up in the air to pass without an open teammate in mind—a rough and awkward situation. Ironically, the Treasury bank rescue plan unveiled by the Obama administration in late March 2009 had elements of MLEC in that institutions are supposed to partner with the federal government to purchase pools of assets. That version, however, has the (huge) advantage of being able to fund the purchases through low-cost government financing, with taxpayers assuming much of the downside risk.

IV. Housing Policy and Foreclosure Avoidance

Throughout 2007, staff at the Treasury and other government agencies prepared numerous analyses and memos on the situation in housing. There was a keen awareness of the serious problems facing households with subprime mortgages, and a rising concern that households with prime mortgages would soon exhibit a similar pattern of rising delinquencies and foreclosures. It was also clear that there were two types of housing problems. In some states in the Midwest and along the Gulf Coast, high delinquency and foreclosure rates reflected weak economies or the continued aftermath of the 2005 hurricanes. This was a traditional problem, in which the causality ran from the economy to housing. The other problem was found in states that were on the downside of housing bubbles, notably Arizona, California, Florida, and Nevada. In these areas, foreclosures reflected the steep declines in home prices and limited availability of credit for marginal buyers, which together put at risk subprime borrowers who had bought homes in 2004 to early 2007 in the expectation that rising home prices would give them equity with which to refinance out of their subprime adjustable-rate mortgages (ARMs). The end of the bubble had closed off this option and left borrowers in danger.

Rising foreclosure rates among subprime borrowers led to pressures—both political and economic—for the Treasury and the administration to do something to assist families at risk of foreclosure. The chairman of the

FDIC, Sheila Bair, correctly identified the rising foreclosure problem early on and pushed for the administration to take action.

IV.A. Initial Measures

Housing policy was seen as involving two main dimensions: a "forward-looking" one relating to measures that would boost demand for housing, including through housing-specific policies such as a tax credit for home-buyers (possibly first-time buyers only) or as part of an economy-wide stimulus, and "backward-looking" policies to help existing homeowners at risk of foreclosure. The administration's response to the housing crisis as of September 2007 included three main proposals, all requiring congressional action. All three might have been worthwhile—indeed, all eventually were enacted in one form or another—but they were dissatisfying in their limited scope.

The first proposal was a set of changes to the legislation governing the Federal Housing Authority (FHA) that would allow additional low- and moderate-income homeowners to refinance into FHA-guaranteed loans.[1] This was on top of a program known as FHASecure, which allowed refinancing by borrowers who had become delinquent because the interest rate on their ARM had increased. All together, the proposals involving the FHA were seen as helping perhaps 500,000 families. The FHA had gained substantial market share as private sector subprime lending disappeared in 2007, and there were concerns that the agency was near its capacity, not least because Congress had not approved funding requested by the administration to update its computer systems.

The second proposal was a change to the tax code, eventually enacted, that forgave the tax due from a borrower whose debt is canceled by the lender, for example when a borrower walks away from a home without paying off the mortgage. The existing tax law treated this reduction in debt as income to the borrower. This change did not boost housing demand or prevent foreclosures but was seen as avoiding an unfair tax bill for people who had just lost their home.

The third proposal was the long-standing effort by the administration to improve the regulation of Fannie Mae and Freddie Mac. The idea was that a strong and independent regulator could better ensure the safety and

1. The FHA package included lowering required down payments, raising loan limits, and allowing for risk-based pricing of insurance premiums so that the FHA could insure loans to yet riskier borrowers by charging them higher premiums. Such risk-based pricing was a political red line for many in Congress, who saw it as unfair to charge more to the people in the worst financial condition and thus in the greatest need of assistance.

soundness of the two companies, thereby helping ensure that they had the financial wherewithal to provide continued financing to mortgage markets. GSE reform was finally enacted as part of the summer 2008 housing bill, by which time it was too late to avert insolvency at the two firms.

The initial focus of housing policy was on the difficulties faced by homeowners in subprime ARMs who were facing an interest rate reset, typically two years (but sometimes three years or more) after origination. The concern by mid-2007 was that many families would not be able to afford the resulting higher payments. (The term "payment shock" was used, although this is a misnomer of sorts, since the interest rate hike was not a surprise but instead the central feature of the mortgage.) FDIC Chairman Bair, for example, argued that up to 1.75 million homeowners could benefit from keeping the interest rate on these subprime mortgages unchanged rather than allowing the rate to reset. Although we at the Treasury agreed that about 1.8 million subprime ARMs would face resets in 2008 to 2010, our assessment was that the driver of foreclosures was the original underwriting, not the reset. Too many borrowers were in the wrong house, not the wrong mortgage. Moreover, as the Fed cut interest rates in late 2007, the rates to which mortgage resets were tied came down as well, reducing or even eliminating the payment shock for many subprime borrowers. This meant that preventing interest rate resets was not likely by itself to avert many foreclosures.

IV.B. Hope Now

To better identify avenues for effective solutions, the Treasury convened meetings in the fall of 2007 with groups of housing industry participants, including lenders, servicers, nonprofit housing counselors, and organizations representing investors in MBSs. What became apparent through this dialogue was that frictions and communication gaps between housing industry participants meant that some homeowners faced foreclosure unnecessarily. The Hope Now Alliance was formed to address these issues.

The Hope Now Alliance was launched by the Department of Housing and Urban Development (HUD) and the Treasury on October 10, 2007. As the organization puts it on its website, Hope Now is an alliance among HUD-approved counseling agents, mortgage companies, investors, and other mortgage market participants that provides free foreclosure prevention assistance. The Treasury saw an important part of the initial work done through Hope Now as basic "blocking and tackling" (football was a preferred source of metaphors in the Paulson Treasury) in getting industry participants to work together and with borrowers more smoothly. The first step in avoiding a foreclosure is for the servicer and borrower to talk to one another, but this was not happening in a surprisingly high proportion of instances: some estimates were that half of foreclosures started without any contact between the borrower and the lender or servicer. Failures of outreach were observed in all directions: servicers were frustrated at the low response rate of borrowers to their letters and phone calls, while many borrowers who did reach out on their own found it difficult to get to the right person for help at their servicer or lender. In some cases they could not get help until they were already substantially delinquent, even if they had seen the problem coming. Nonprofit housing counselors had a valuable role to play, since they were often seen by borrowers as a neutral party, and tended to report higher response rates from at-risk borrowers. But counseling was something of a patchwork, with uncertain funding and unclear relationships between counselors and lenders. Counselors would tell the Treasury that they worked well with some lenders and servicers but could not get in the door at others; servicers had similar issues with uneven relationships in the other direction. For their part, servicers were still hesitantly exploring the legal room they had to modify loans, and they faced resource constraints in that their contracts did not envision the need for large-scale modification efforts to avoid foreclosures.[2]

Hope Now brought together the leading subprime servicers, national counseling agencies (including the highly regarded NeighborWorks organization), and industry and investor trade associations such as the Mortgage Bankers Association, the Financial Services Roundtable, the Securities Industry and Financial Markets Association, and the ASF. The inclusion of industry associations was helpful, providing a channel through which to bring together firms across the housing ecosystem. Getting the servicers involved was essential, since they were the point of contact between the industry and individual borrowers. From the outset, servicers accounting for about half of subprime mortgages participated in Hope Now; this grew to cover better than 90 percent of subprime and 70 percent of all loans by mid-2008. (The potential coverage is limited because some banks service their own mortgages.) This effort was backstopped by intense involvement of Treasury staff (particularly Neel Kashkari, then a senior adviser to Secretary Paulson who had come up with the idea) and substantial personal involvement by Paulson himself. Participants in Hope Now committed to creating a unified plan to reach homeowners and help them avoid foreclosure.

2. Cordell and others (2008) discuss issues regarding servicers in detail.

Hope Now initially focused on outreach—the blocking and tackling—with the goal of reaching troubled borrowers early enough so that a loan modification could at least be contemplated. A national foreclosure counseling hotline (888-995-HOPE) was set up, along with a publicity campaign to advertise it, featuring public service announcements and public events with government officials, including President Bush. Hope Now arranged for servicers to provide funding for the nonprofit counselors (who had previously relied on government and foundation resources), standardized communication protocols between counselors and servicers, and collected systematic data on the number of people helped and the modifications made. Participants in Hope Now agreed to provide subprime borrowers with information about their reset four months in advance, and to send high-visibility letters to all borrowers who became 60 days delinquent, urging them to call the Hope Now hotline. This kind of outreach sounds basic, but it was unprecedented for the industry. Hope Now reported that the call volume on its hotline surged in late 2007 and into 2008.

The next step was to follow up these activities with a systematic approach to help at-risk borrowers refinance or obtain a loan modification that would avoid a foreclosure. The fundamental goal was to "avoid preventable foreclosures." As Secretary Paulson and others were to say repeatedly, this meant that the Treasury was looking for ways to help homeowners who were struggling with their mortgage payments but both wanted to stay in their home and had the basic financial wherewithal to do so. "Wanting to stay" meant that the homeowner would not walk away from a home as long as he or she could afford the monthly payment. "Basic financial wherewithal" meant that the Treasury's efforts were aimed at getting mortgage servicers to modify loans for homeowners with subprime ARMs who could afford their payments at the initial (pre-reset) interest rate, where the cost to the beneficial owner of the mortgage of modifying the loan was less than the loss that would be suffered in a foreclosure. Not every foreclosure could be prevented through a modification—after all, over 600,000 foreclosures occur in a "normal" year. But we at the Treasury wanted to make sure that no borrowers got foreclosed on who could afford to stay in their home under the set of circumstances above. The loan modifications were part of the solution and would complement other efforts to enable homeowners to refinance into fixed-rate loans, whether through the FHA or through a private lender.

Through Hope Now, the Treasury pushed lenders and servicers to undertake a calculation that balanced the cost (in net present value) of a modification that would keep a family in their home against the loss to the mortgage owner that would be suffered in a foreclosure—from legal fees, possible damage to the home, the resale consequences for a bank trying to sell a foreclosed home in a declining market, and the fact that putting the house up for sale would further depress home prices. When this net present value calculation indicated that it made sense to modify the loan, the Treasury—and Secretary Paulson personally—expected lenders to do so to avoid foreclosure. The Treasury also pushed servicers to ensure that loan modifications were of a long enough duration to give borrowers a chance for the income growth and home price appreciation that would allow them to refinance permanently into a conforming fixed-rate loan.

Although these modifications were in everyone's best interest, they did not appear to be taking place on the scale that would be expected. The impact of second liens was one reason, since these make it difficult for the servicer of the first lien to get agreement on a modification—and in the case of piggyback second loans, it meant that the borrower was in much worse financial shape than would be indicated by the first lien alone and thus less likely to be able to sustain even a modified first mortgage. Addressing the frictions in the modification process turned out to be an ongoing project at the Treasury.

The goal, again, was a modification that would lower the monthly payment to an amount that the borrower could afford. Some borrowers might still walk away from their homes because they were deeply underwater, while others would have such a severe mismatch between mortgage and income that it made more sense from the point of view of the mortgage owner to foreclose. Servicers would structure loan modifications to lower an at-risk borrower's monthly payment in the way that imposed the least cost on the beneficial owner of the mortgage. Given simple bond mathematics, this meant that servicers would first reduce the monthly payment by extending the loan term out to 30 or 40 years; then, if necessary, lower the payment further by cutting the interest rate; and only as a last resort lower the principal (and then only if the contract governing the servicer allowed for a principal reduction, which was not always the case).

If a homeowner could not sustain payments at the initial interest rate, the view at the Treasury was that this person was probably in the wrong home. The Treasury asked lenders to look at each situation, but we recognized that, as Secretary Paulson put it, many such homeowners would become renters.

The loan modification approach thus focused on people with payment and income problems, not on underwater borrowers. Since mortgages in many states do not allow the lender recourse to claim a borrower's assets beyond the home collateralizing the mortgage, this meant that many underwater borrowers might walk away and allow foreclosure even if they could afford their monthly payment. Not everyone would do so: a household with a mortgage equal to 105 or 110 percent of their home value might well stay if they could afford the monthly payment—they might like their neighborhood or the local school, for example, or hope to see prices rebound. But it was quite rational for a person who got into a home with little or no equity and then suffered a 40 or 50 percent price decline to walk away. Being underwater thus made a foreclosure more likely but was not a sufficient condition. The Treasury did not expect banks to modify loans where borrowers could afford the payment but were balking at paying because they were underwater—quite the opposite: Secretary Paulson's view was that a homeowner who could afford the mortgage but chose to walk away was a speculator.

As a practical matter, servicers told us, reputational considerations meant that they did not write down principal on a loan when the borrower had the resources to pay—never. They would rather take the loss in foreclosure when an underwater borrower walked away than set a precedent for writing down principal, and then have to take multiple losses when entire neighborhoods of homeowners asked for similar writedowns.

We also realized that the prospect of assistance could lead borrowers who were not in difficulty to stop making payments in order to qualify for easier terms. Such moral hazard is unavoidable, but one can choose the screens and hurdles that borrowers must pass to qualify for a modification. The trade-off is that steps to limit moral hazard also limit take-up.

IV.C. The Debate over Subsidizing Foreclosure Avoidance

The Treasury expected lenders to go up to the line, making modifications wherever the net present value calculation favored it. But there was no public money on the table to get them to go further.[3] Even though we realized that there was no appetite in Washington for crossing the line, Treasury economists in October 2007 developed plans for two types of policies to put public resources into foreclosure prevention.

The first policy focused on underwater borrowers, with the federal government in effect writing checks in cases where lenders were willing to take a write-down. The lender had to take a loss on the principal, after

3. A possible exception was that FHA-guaranteed loans involved a public subsidy to the extent that the FHA unintentionally underpriced its insurance, as one might expect from a government insurer.

which the federal government would subsidize the cost of a guarantee on the modified loan—this could in effect be a substantial subsidy because these would be loans to borrowers who were still quite risky. The borrower would be required to pay part of the annual premium for the federal guarantee. This arrangement was broadly similar to the Hope for Homeowners program later developed jointly by the Fed and congressional staff, but with more realistic parameters for servicers and without the pretense that no federal spending was involved. The plan was known at the Treasury as the "GHA," a reference both to its operation through a dramatic expansion of the FHA in putting guarantees on mortgages to risky borrowers, and to one of the main authors of the idea, Deputy Assistant Secretary for Microeconomic Analysis Ted Gayer, who was at the Treasury for a year on leave from Georgetown University's Public Policy Institute.

The second type of policy focused on affordability and involved a matching federal subsidy to lenders willing to lower interest rates in order to reduce the monthly payments for at-risk borrowers.[4] The approach was based on the bond math above that the most cost-affordable way to lower monthly payments, after extending the term, was to cut the interest rate, and on the straightforward notion that the government should pay lenders and servicers to do what it wanted them to do. In this case the federal government wanted them to lower interest rates to avoid foreclosures on at-risk borrowers, and therefore it would give them a financial incentive to do so and no financial incentive to put people into foreclosure. Lenders would have to fund the first 50 basis points of the interest rate reduction, to give them an incentive to screen out marginal cases where they should just modify the loan without any subsidy, after which the federal government would pay half the cost of lowering the interest rate up to a total of 450 basis points; thus, the lender would fund a maximum of 250 basis points and the federal government 200 basis points. Lenders could reduce interest rates further on their own without an additional subsidy, but the presumption was that a borrower who needed more than a 450-basis-point reduction was in the wrong home. If a borrower defaulted after the modification, the federal subsidy would end—the government would pay for success, not for failure. The subsidy would end after five years, long enough of a breathing space for borrowers to have income growth and home price appreciation and thus be in a position to refinance into a fixed-rate loan. The trade-off involved in setting this time limit is clear: a longer subsidy

4. Credit for this idea goes to Ted Gayer and John Worth, director of the Office of Microeconomic Analysis. Their idea was adopted by the Obama administration in 2009.

than five years gives people more time to ensure that they can afford the home after the subsidy ends, but it means a more expensive modification for the lender and thus less uptake—fewer people would get into the program, but more of those who did would be saved. We saw five years as striking the right balance, and our analysis showed that several million homeowners could avoid foreclosure with this interest rate subsidy.

The initial reaction to the proposed interest rate subsidy among Fed staff responsible for analysis of housing policy in October 2007 was disinterest, because the plan did not address the problem of underwater borrowers on which they were focused (as shown by the Hope for Homeowners approach the Fed helped to develop). We agreed that the subsidy would not be enough of an incentive to dissuade a deeply underwater borrower—say, one with a loan of 150 percent of home value—from walking away. But our view was that there was a government budget constraint (even if many outside critics charged that the Bush administration did not act like it), and it was not a wise use of public resources to write huge checks to people who could afford their homes but might then choose not to stay in them. This view, unlike the secretary's assertion that a person who would walk away was a speculator, was based on practical, not moral, grounds: it would be better at the margin to use taxpayer dollars to hire more preschool teachers, say, than to subsidize deeply underwater borrowers.

While the Fed staff was focused on underwater borrowers, within the administration—among White House staff in particular, but also within the Treasury—many were unwilling to put public money on the line to prevent additional foreclosures, because any such program would inevitably involve a bailout of some "irresponsible" homeowners. Put more cynically, spending public money on foreclosure avoidance would be asking responsible taxpayers to subsidize people living in McMansions they could not afford, with flat-screen televisions paid for out of their home equity line of credit. The policy rationale to spend public money is clear in that there is a negative externality from foreclosures to home inventories and thus prices. But the public opposition to such bailouts appeared to be intense—ironically, many people were already angry at the Treasury for supposedly bailing out irresponsible homeowners through Hope Now, even though this did not involve explicit public spending.

Congress appeared to heed this opposition as well: there were constant calls for the Treasury and the administration to do more on foreclosure prevention, but this was just rhetoric. Until the FDIC came out with a proposal late in 2008, there was no legislative support to spend public money to actually prevent foreclosures—the congressional proposal discussed below ostensibly did not use public funds. And as discussed below in relation to the TARP, even in the fall of 2008, Congress' desire was for the Treasury to spend TARP money for foreclosure avoidance. Members of Congress did not want to have to vote specifically to spend money on this, suggesting that they understood the poor optics of having the government write checks when some would find their way into the hands of "irresponsible homeowners."

In 2007 and through the middle of 2008, the focus of legislative energies was on the so-called Frank-Dodd legislation, which became law on July 30, 2008, as part of the Housing and Economic Recovery Act of 2008 (which included provisions to reform the GSEs). This proposal, named for its main sponsors Congressman Barney Frank (D-MA) and Senator Christopher Dodd (D-CT), involved FHA-guaranteed refinances of mortgages for which lenders were willing to write down the loan principal to 87 percent of the current market value. This was a great deal for the homeowner, who would face lower payments and gain substantial equity (while having to share some of these gains with the federal government on a future sale), but a huge write-down for the lender, actually exceeding 13 percent in instances where home prices had declined since origination. And there was ostensibly no government money involved, as the legislation required the GSEs to cover any costs—again demonstrating the reluctance of policymakers to be seen as writing checks to irresponsible homeowners. The Congressional Budget Office (CBO) estimated that the Frank-Dodd approach would help some 400,000 homeowners. Having heard directly from lenders about their reluctance to reduce loan principals, we saw the CBO estimate as optimistic by 400,000. Because the bill included legislation to strengthen the regulation of the GSEs, however, President Bush signed it into law. Staff from the FHA, HUD, the Fed, the Treasury, and the FDIC made an immense effort to implement the new Hope for Homeowners program—and then unfortunately the Treasury's estimate of participation turned out to be correct, with few loans refinanced through the middle of 2009.

As before, avoiding more foreclosures required someone—either the government or lenders—to write a check. The attraction of the so-called bankruptcy cramdown proposal, under which bankruptcy courts could retroactively change mortgage contracts by reducing the loan principal, was that it appeared to be "free"—which it was to the government—but only because the cramdown would be a forced transfer from lenders to homeowners. The Treasury opposed the cramdown proposal out of concern that abrogating contracts in this way would have undesirable consequences for the future availability of credit, especially to low-income borrowers. Some current borrowers would benefit from having their mortgage balance reduced, but future borrowers would find it more difficult to obtain a loan.

IV.D. The ASF Fast-Track Framework

With subsidies still off the table, what was done with respect to foreclosure avoidance in late 2007 and into 2008 was that the Treasury and Hope Now worked with the ASF to make modifications happen faster and more frequently. This turned into the Streamlined Foreclosure and Loss Avoidance Framework announced on December 6, 2007. This initiative focused on approximately 1.8 million subprime ARMs with initial teaser rates set to reset in 2008 and 2009. Servicers agreed to carry out a fast-track process to help borrowers refinance into a fixed-rate loan (the first choice for borrowers with adequate income and credit history), or, failing this, to provide a five-year extension of the initial rate for borrowers who could afford their monthly payment at that rate. This would give borrowers time to experience income gains and home appreciation that would put them in a position to refinance into a fixed-rate loan in the future. A longer modification than five years would be more costly to a lender, and thus fewer modifications would pass the cost test. And even a five-year horizon would be a change from industry practice, which was geared to "repayment plans"—short-term modifications appropriate for a borrower with a temporary income problem of a few months. Industry participants estimated that about one-third of the 1.8 million potential borrowers in the program could not afford their starter rate, and another one-third could clearly receive either a refinancing or a rate freeze. The aim was to save as many as possible of the remaining 600,000, so as to come close to helping 1.2 million homeowners. The ASF fast-track framework provided servicers with a set of best practices to implement modifications.

The streamlined framework was formally launched in early 2008, but some servicers began to use it in late 2007. Hope Now reported a dramatic increase in the number of homeowners receiving help in the form of a refinancing or a loan modification, from about 300,000 per quarter in the first half of 2007 to over 500,000 per quarter in mid-2008 and nearly 700,000 in the last three months of 2008. The increase was especially noticeable for subprime borrowers, where the number of long-term modifications rose from fewer than 50,000 per quarter in the first nine months of 2007 to over 200,000 in the last quarter of 2008 alone. By the end of 2008, nearly half of homeowners receiving help got long-term modifications rather than short-term repayment plans, compared with fewer than 20 percent previously. Hope Now was not solving the foreclosure problem, but it was performing as designed. Moreover, other homeowners refinanced without the involvement of Hope Now.

The Treasury and Hope Now nonetheless faced continuing criticism that these efforts were inadequate and that servicers were not doing enough loan modifications. The Center for Responsible Lending (CRL), for example, put out a widely cited report on January 30, 2008, claiming that the "Paulson plan" for voluntary loan modifications would help only 3 percent of at-risk homes. What was not reported, however, was that the 3 percent figure was calculated using several unusual assumptions. First, the denominator, the number of at-risk homes, included not just owner-occupied homes but also investor properties, even though the ostensible goal was to save homeowners, not investors. Second, the numerator—the measure of success—included the loan modifications but not the refinancings into fixed-rate mortgages, which were usually better than a modification. Treasury economists who redid the analysis correcting these questionable assumptions calculated that at least 30 percent, and possibly more than half, of eligible homeowners would be helped by the Hope Now framework. The CRL did not correct their analysis when we quietly pointed out to them the flaws (which their researchers acknowledged), but neither did the Treasury go out proactively to the media to dispel the misconception.

As criticisms continued that not enough was being done to prevent foreclosures, the focus at Treasury turned to coming up with additional actions through Hope Now that would show that more was being done. Out of this came the February 12 announcement of "Project Lifeline," under which severely delinquent borrowers would be granted a 30-day pause on foreclosure proceedings, as a last-ditch breathing space to allow borrowers to work with their lender or servicer to find a modification that made sense for both sides.

Some hurdles to modifications were difficult to address. Servicers had varying abilities to deal with the large number of modification requests. Also, as already noted, the presence of a second lien, such as a home equity line of credit or a piggyback mortgage, could present a challenge to a modification on the primary mortgage, since owners of second liens had an incentive to hold up the process unless they received a payoff—this even though a second lien on a troubled borrower was worth only pennies on the dollar, since the primary mortgage holder would have the first right to the proceeds of a foreclosure sale.

Legal and accounting issues constituted two further hurdles to loan modifications. Servicers were unclear as to their legal ability to modify loans within securitization trusts, and they worried that undertaking too many modifications would lead to an adverse change in the accounting treatment of the MBSs containing the loans. Financial Accounting Standards Board statement number 140 provides guidance on whether a transfer of assets to a securitization trust can receive off-balance-sheet treatment. The concern was that if too many loans were modified, this would make the trust no longer a passive structure and therefore ineligible for off-balance-sheet treatment. SEC Chairman Christopher Cox indicated that having loans in an MBS trust receive the five-year rate freeze did not preclude continued off-balance-sheet treatment so long as it was "reasonably foreseeable" that the loans being modified were otherwise headed for default. Treasury economists worked with FDIC staff to analyze loan-level data on subprime mortgages. The results showed that for subprime borrowers in the years covered by the Hope Now streamlined approach, it was sadly straightforward to conclude that a default was reasonably foreseeable. These results went into a letter from the Treasury to the SEC that was meant to provide backing for Chairman Cox. The view at the Treasury was then that servicers had the legal authority they needed to modify loans, and that there was no need for congressional proposals to enact a "safe harbor" that would explicitly provide such cover. Although we realized that the safe harbor provision might have avoided some lawsuits against servicers who modified loans, our concern was that it was a retroactive change to contracts—not as obviously harmful as the mortgage cramdown proposal, but harmful nonetheless in suggesting to lenders that they should henceforth worry about retroactive changes to contracts.

It turned out that the original motivation for the Hope Now streamlined modification protocol was incorrect, in that interest rate resets by themselves were not the fundamental driver of rising foreclosures—a point documented by Mark Schweitzer and Guhan Venkatu (2009). This can be inferred from figure 1, since the foreclosure rate does not have an upward kink at the typical reset point at month 24. Many subprime ARMs started at an initial rate of 8 to 9 percent for two years and then were scheduled to reset to 600 basis points above the six-month LIBOR (the London interbank offered rate). By early 2008, however, LIBOR had fallen to 3 percent or less, so that the step-up in the interest rates and thus the payment shock were fairly modest. We nonetheless saw the ASF streamlined modification framework as useful, since it would be ready in case interest rates rose in the future, and it was driving modifications for loans even before resets.

IV.E. Housing Policy in 2008

Treasury housing policy by early 2008 had four goals:

—avoiding preventable foreclosures as discussed above;

—ensuring the continued flow of capital into housing markets, both through efforts to enact reform of the GSEs and by resisting proposals, such as the bankruptcy cramdown, that would have reduced the availability of capital for housing finance;

—enabling the necessary housing correction to proceed, which meant warding off proposals for long-lasting foreclosure moratoriums, which we saw as simply prolonging the difficulty without providing lasting help for at-risk homeowners; and

—supporting the broad economy, such as through the January 2008 stimulus.

With little desire on anyone's part to put public money on the table, housing policy was to remain largely focused around the debate over modifications achieved through Hope Now, and over the Frank-Dodd legislation.

A recurring theme of policy proposals from outside the Treasury was that the Treasury should promote shared-appreciation mortgages, in which homeowners would get a loan modification or financing concessions in exchange for giving up part of the home's future appreciation to the lender. We studied this proposal, which amounted to a debt-for-equity swap, but concluded that this type of mortgage was not already common because there was little demand for it.

The one truly new proposal we heard in early 2008 was that of Martin Feldstein, who in a March 7 op-ed in the *Wall Street Journal* ("How to Stop the Mortgage Crisis," p. A15) and in subsequent writings proposed stabilizing the housing market by offering all homeowners a government loan that would be used to reduce the principal on first-lien mortgages. Such a loan would make it less likely that homeowners would have negative mortgage equity and thereby reduce future defaults in the face of continued home price declines. Participating homeowners would not be able to walk away from the government loan, because it would be a tax lien that could not be escaped in bankruptcy. The Feldstein proposal would not help borrowers already facing foreclosure, but that was not the point—it was meant to arrest the impact of future potential underwater borrowers walking away from their homes and adding to inventories, thus intensifying the downward momentum of home prices. Intrigued, we analyzed the potential impacts, including looking at the Internal Revenue Service's record in collecting on tax liens to get a sense of the budget cost. In the end, however, with little political support for spending money on risky homeowners, there was even less prospect of a massive housing program aimed at the better-off homeowners who were not in imminent danger.

Housing policy was to stay essentially static until later in 2008, when the $700 billion TARP fund became available and calls grew to spend part of it on foreclosure prevention. In the fall of 2008, the FDIC developed two initiatives aimed at foreclosure avoidance. The first was a roadmap for servicers to follow in modifying loans—a “mod in a box” as they called it—detailing the calculations needed to implement the net present value calculation comparing the costs of foreclosure with those of loan modification. This was based on the FDIC’s experience with IndyMac, the Los Angeles-area savings and loan that the agency had taken over on July 11. The IndyMac protocol involved steps to bring a borrower’s monthly payment on his or her first mortgage down to 38 percent of pre-tax income (a figure that the FDIC changed to 31 percent when it found that many borrowers could not stay current at the 38 percent level). The steps were familiar from the bond math above: there was no principal write-down but instead a term extension, interest rate cuts, and principal forbearance, all aimed at lowering monthly payments. The FDIC approach looked only at the monthly payment as a share of the first mortgage—the so-called front end ratio—and not at total loan payments (the so-called back-end ratio) including a second lien, if present, and any auto loans and credit card bills. This focus on the front end was done for speed; the idea was to allow for rapid modification of loans, accepting that some might well go bad, since a borrower with loaded-up credit cards might ultimately still default even if the interest rate on the home loan was reduced. This approach to modifications was a natural extension of the streamlined protocol developed in late 2007 through the auspices of Hope Now, although the media did not make this connection and the Treasury did not press it (that is, the Treasury did not pro-actively note that the Hope Now activities that so many people had criticized had provided the groundwork for the widely acclaimed FDIC approach). The GSEs later adopted much of the approach of the IndyMac protocol in putting out their own streamlined approach to modifications on November 11, 2008.

The second FDIC proposal for foreclosure avoidance was a loss-sharing insurance plan, under which the federal government would make good on half of the loss suffered by a lender that modified a loan according to the IndyMac protocol but later saw the loan go into default and foreclosure. This was an innovative margin on which to push: there was a great deal of anecdotal evidence, later confirmed by statistical evidence from the Office of the Comptroller of the Currency, that many loans were going bad even after they had been modified to reduce the payment. The FDIC plan provided some comfort to a lender for making the modification, since the lender would be reimbursed for half of the loss if the borrower eventually defaulted. Housing activist groups such as the Center for Responsible Lending endorsed the FDIC plan, as did Elizabeth Warren, the Harvard law professor appointed by Congress to chair an oversight panel for the TARP. The proposal received a good deal of coverage in the press, some of which confused the loss-sharing insurance proposal with the IndyMac protocol, even though the latter involved no government resources.

At the Treasury, we noted that the FDIC plan gave rise to new forms of both adverse selection and moral hazard in ways that made it mainly a windfall for the beneficial owners of mortgages rather than a benefit for homeowners. In other words, American taxpayers would be providing a subsidy to banks, hedge funds, and other owners of MBSs (including foreign banks and foreign hedge funds) rather than to American families. Under the FDIC proposal, if a servicer modified a loan and the borrower was able to stay in the home as a result, the owner of the mortgage got nothing from the government.[5] If, however, a loan was modified according to the FDIC's protocol and it went bad, the government would write a large check to the mortgage owner. Moreover, there was no deductible on this loss-sharing insurance coverage, so in the case of an underwater borrower, the government would have in effect been providing fire insurance on an entire house when several of the rooms were already engulfed in flames. At the Treasury, we viewed the loss-sharing insurance proposal as a nontransparent way to funnel money to institutions that had made bad lending decisions and to investors who had bought the loans—a hidden bailout. Ironically, however, the *New York Times* on November 1, 2008, published an article by columnist Joe Nocera asserting that the Treasury opposed the FDIC proposal because "aid is going to homeowners, not giant financial institutions."[6]

The confusion in the *New York Times* column might have reflected a common difficulty in understanding the impacts of insurance proposals, since the costs are implicit at the start whereas the payouts are yet to be realized, and thus the subsidy is somewhat obscured. In this case, big checks

5. The proposal would have paid a flat $1,000 for modifying a loan, but this went to the servicer, not to the owner of the loan; this payment could have put the servicer at odds with its fiduciary obligation to make modifications that were only for the benefit of the owners of the mortgage.

6. Joe Nocera, "A Rescue Hindered by Politics," *New York Times,* November 1, 2008, p. B1.

would get written to banks and hedge funds, but only six months or more down the road as the modified loans defaulted. In contrast, the interest rate subsidy puts the government resources to avoid foreclosure in clear daylight—it looks exactly like what it is, which is writing checks to people who are in homes they cannot afford. The cost per incremental foreclosure avoided, however, is much less with the interest rate subsidy. In short, this proposal is more efficient but suffers from its transparency.

In evaluating the FDIC proposal, Treasury economists suggested that a way to remove some of the unwanted windfall for lenders was to have the insurance payout reflect any decline in the area home price index after the loan modification, rather than the lender's loss from foreclosure. Setting the payout in this way would cover the valid concern that declining home prices gave servicers an incentive to foreclose sooner rather than give a risky borrower another chance. Although the FDIC declined to incorporate this suggestion, the Obama administration eventually made it part of its February 2009 foreclosure avoidance proposal. A related proposal by Treasury economist Steven Sharpe (a Fed staffer who came to Treasury for several months to help with capital markets and housing proposals) was for the federal government to sell insurance against price declines to home purchasers. At closing, buyers could pay a fee and receive insurance that compensated them five years later for any decline in overall home prices in their area—homeowners would receive the payout, if any, without having to sell their home. The idea was to boost housing demand going forward by removing the fear among potential homebuyers of "catching a falling knife"—that is, buying a home that would continue to lose value and leave them underwater.

The adverse selection in the FDIC loss-sharing proposal came about because lenders would naturally want to put into the program those loans that were most likely to default, so that the government would cover half of any loss. At the suggestion of the Fed, the FDIC included a six-month waiting period, which meant that the lender would have to bear the cost of modifying the loan for six months. The moral hazard came about because the lender would have a financial incentive to foreclose immediately after the six-month waiting period. Under the FDIC proposal, lenders would qualify for this loss-sharing insurance coverage only if they agreed to apply the IndyMac modification protocol to all loans in their portfolio—lenders could not choose to include, for example, only the loans of borrowers that they knew had huge credit card debts. But this did not change the fundamental incentives; it just meant that lenders would participate in the program only if the expected value of the insurance windfall they received to cover losses exceeded the total cost of the modifications they would be required to fund.

Both the interest rate subsidy developed at the Treasury and the FDIC's loss-sharing insurance proposal focused on affordability rather than on underwater borrowers; we saw this as entirely appropriate from the point of view of the allocation of government resources. But the incentive effects of the two proposals were clearly different, since the interest rate subsidy would be paid only when foreclosure was avoided, whereas the loss-sharing insurance by its nature would pay out when foreclosure occurred. Even Elizabeth Warren conceded to Treasury staff that she understood that banks rather than homeowners would benefit more from the FDIC plan. She was evidently supporting the FDIC proposal in public because she thought something had to be done about foreclosures, and the FDIC plan seemed to be the only one on the table. The American Bankers Association endorsed the FDIC plan as well; presumably this reflected their understanding of its impact.

V. The Stimulus of 2008

By October 2007 there were increasing signs that the economy would remain weak into 2008 and that there was considerable downside risk from the housing and financial markets. Work began in earnest on fiscal policy options to support growth. The idea that such action might be needed was buttressed by public calls for it by prominent economists, notably Lawrence Summers and Martin Feldstein. Throughout November and December, the administration's economic team—the Treasury, the Council of Economic Advisers (CEA), the Office of Management and Budget, and the National Economic Council—considered various approaches, focusing on tax cuts for households and businesses. In the end, the Economic Stimulus Act of 2008 contained mainly tax cuts, along with an extension of unemployment insurance benefits. The form of the tax cuts was remarkably similar to what CEA Chairman Edward Lazear had sketched out as an initial proposal: rebate checks implemented as a reduction of the lowest individual income tax rate, and thus mainly an inframarginal tax cut, along with additional expensing and bonus depreciation for businesses. Sending a one-time check to households was not the administration's first choice—the view was that a longer-lasting policy would have more impact. But there was no political prospect of a permanent tax cut or extending the administration's 2001 and 2003 tax cuts. This was about tactics—supporting the broad economy while housing and credit markets continued to adjust—not a strategic approach to increasing long-term growth.

The stimulus was proposed in early January and signed into law in mid-February, speeded by the administration's stipulation that it would not fight for "Bush-style" tax policy and what seemed to be a determination by the congressional leadership to get this done quickly after an initial year in power with only modest accomplishments. The details of the tax provisions were agreed with the House leadership late one evening, when only that very morning the Treasury legislative affairs staff had reported that it could be weeks before a compromise was reached.

The Internal Revenue Service and the Financial Management Service within the Treasury worked wonders to push out nearly $100 billion in rebate checks and electronic payments, with most of the cash going out the door from April 28 to July 11, 2008. We at the Treasury, at least, expected the main impact of the stimulus to come from the rebate checks rather than the expensing provision; with the economy weakening, it was hard to see much stimulus to business investment from a tax incentive that amounted to the time value of money. Our expectation was that about 30 percent would be spent in the second and third quarters, rising to 40 percent by the end of 2008. Assuming a modest second-round multiplier, we tallied up a boost of $50 billion to aggregate demand. With each job created or preserved corresponding to about $100,000 of income in the national accounts, a back-of-the-envelope calculation suggested a boost of 500,000 jobs. Simulations using the private sector Macroeconomic Advisers model suggested roughly the same impact on employment.

In retrospect, the stimulus appears to have been the right thing for the wrong reason in that the rebate checks effectively served to offset the drag from higher energy prices. Looking back in January 2009, we calculated that higher energy prices in mid-2008 had meant an unexpected hit to U.S. consumers of about $40 billion—close to the additional spending we had expected from the stimulus. Others have disagreed, claiming that the stimulus was simply ineffective. This remains an important topic for future research. The higher energy prices hit at precisely the wrong time, causing a downdraft to spending just as the labor market was finally feeling the impact of slower-than-potential GDP growth in the latter part of 2007.

VI. Bear Stearns and Plans to Break the Glass

The collapse of Bear Stearns over the weekend of March 14, 2008, was a watershed event for the Treasury. Until that point the Treasury had urged financial institutions to raise capital to provide a buffer against possible losses but had not contemplated fiscal actions aimed directly at the financial sector. Instead, the main policy levers were seen as being the purview of the Fed, which had cut interest rates and developed new lending facilities in the face of events. From the Treasury side, the deliberations of that weekend were handled directly by Secretary Paulson working the phones from his home; meanwhile the Fed provided J. P. Morgan with financing to purchase Bear Stearns. Moral hazard was a huge concern, but the feeling at the Treasury was that even when the Bear Stearns transaction was renegotiated up from $2 per share to $10, the loss of wealth was still large enough to give pause to market participants and thus mitigate the moral hazard. Of course, moral hazard derived more broadly from the fact that Bear Stearns' bondholders and counterparties avoided a loss. But the Treasury and the Fed saw little alternative to rescuing the firm at that time (or at least cushioning its fall), simply because the speed of its collapse left markets unprepared.

A number of lessons of that weekend have received extensive discussion in the financial press and in the academic literature, including the role of liquidity (as discussed by Allen and Carletti 2008), the fragilities arising from counterparty risks embedded in the three-party repo system and the over-the-counter derivative markets, and the need for a resolution mechanism for troubled nonbank financial institutions. At the Treasury, two additional lessons were learned: first, we had better get to work on contingency plans in case things got worse, and second, many in Washington did not understand the implications of nonrecourse lending from the Fed. The second lesson was somewhat fortuitous, in that it took some time before the political class realized that the Fed had not just lent J. P. Morgan money to buy Bear Stearns, but in effect now owned the downside of a portfolio of $29 billion of possibly dodgy assets. This discovery of the lack of transparency of nonrecourse lending by the Fed was to figure prominently in later financial rescue plans.

The Fed's March 17 announcement that it would provide loans to broker-dealers through the new Primary Dealer Credit Facility seemed to us and many Wall Street economists to remove the risk of another large financial institution suffering a sudden and catastrophic collapse as a result of a liquidity crisis. This provided some time to plan for further events.

Part of the planning was for the long term. On March 31, 2008, the Treasury released its Blueprint for a Modernized Financial Regulatory Structure, with a vision for a long-term reshaping of financial sector regulation. This plan had long been in the works; indeed, Treasury had requested public comments on the topic in October 2007. However, the timing of the Blueprint's release led to press reports that this was the Treasury's "response" to the crisis.

More near term in vision was work being done on so-called break-the-glass options—what to do in case of another major emergency. This work evolved from a recurring theme of input from market participants, which was that the solution to the financial crisis was for the Treasury to buy up the toxic assets on bank balance sheets. Eventually Neel Kashkari and I wrote a memo listing options for dealing with a financial sector crisis arising from an undercapitalized system. The memo went through more than a dozen iterations in discussions around the Treasury and with Fed headquarters and the New York Federal Reserve Bank between March and April.

The options were fourfold: buy the toxic assets, turn the Treasury into a monoline insurer and insure the assets, directly buy stakes in banks to inject capital, or refinance risky mortgages into government-guaranteed loans and thus improve asset performance and firms' capital positions from the bottom up. With estimates such as that of David Greenlaw and others (2008) in mind that U.S. financial institutions would suffer $250 billion of losses from mortgage securities, we envisioned a government fund of $500 billion. A mix of asset purchases, capital injections, and additional private capital raising by banks would allow this amount to roughly offset the expected losses.

These options would move the focus of financial markets policy back from the Fed to the Treasury, which would be appropriate in that the problem reflected inadequate capital rather than insufficient liquidity. But these actions all required congressional action, and there was no prospect of getting approval for any of this. With economic growth positive and the stimulus rebates only just beginning to go out in late April, it was unimaginable that Congress would give the Treasury secretary such a fund. And it was doubly unimaginable that the fund could be enacted without immediately being put to use. Such a massive intervention in financial markets could be proposed only if Secretary Paulson and Chairman Bernanke went to Congress and announced that the financial system and the economy were on the verge of collapse. By then it could well be too late.

For several months in the second quarter of 2008, things seemed to be improving. The housing adjustment appeared to be proceeding. Prices continued to fall and construction and sales were still in decline, but the rate of descent appeared to be slowing, and our view was that by the end of 2008 housing would no longer be subtracting from GDP. The second half of 2008 looked to be difficult, but we expected the rebate checks to support consumption until the drags from housing and the credit disruption eased and growth rebounded in 2009.

VII. Rescuing the GSEs

The relative quiet was to hold until early summer, when the effects of the housing collapse manifested themselves in the collapse of IndyMac and severe pressures on the GSEs, in the form of declining stock prices and widening spreads on Fannie and Freddie securities, and thus on mortgage interest rates for potential homebuyers. The FDIC took over IndyMac and turned the firm into a laboratory for its foreclosure prevention ideas, but the problems of the GSEs fell squarely in the Treasury's court. The Treasury was in a difficult position. GSE debt and MBSs with GSE guarantees were held throughout the financial system, and a failure of the firms would have meant chaos in financial markets. As commentators such as Peter Wallison of the American Enterprise Institute had long warned, (see, for example, Wallison, Stanton, and Ely 2004), the GSEs were holding the financial system and taxpayers hostage—and in mid-July 2008 it seemed they would win the standoff.

The options were all unpleasant, and all required congressional action: to provide the GSEs with more liquidity by raising their line of credit with the Treasury from \$2.25 billion each to something much larger; to inject capital; or to ask Congress to put the two firms into conservatorship, with the government running the companies on behalf of their shareholders (which would eventually be mainly the government). This last option could be done under existing legislative authority but still required congressional approval, and the GSEs could have fought this and might well have won, since their regulator had said as recently as July that the two firms were adequately capitalized. (This statement referred to statutory definitions of capital, which included tax assets that could only be monetized in the future when the firms became profitable again, but it nonetheless carried weight.) Moreover, even putting the GSEs into conservatorship raised questions about whether their \$5 trillion in liabilities would be added to the public balance sheet. This did not seem to Treasury economists to be a meaningful issue, since the liabilities had always been implicitly on the balance sheet—and in any case were matched by about the same amount of assets. But the prospect that rating agencies might respond by downgrading U.S. sovereign debt was unappealing. A fourth option, receivership, would involve liquidating the companies and was deemed off the table because it would have required winding down the GSE portfolios.

These portfolios were the source of the systemic risk arising from the GSEs' activities, but the GSEs' purchases of MBSs were important for ensuring the availability of financing to potential homebuyers. Addressing the portfolios would have to wait for a longer-term reform.

In the end, Secretary Paulson went to the steps of the Treasury building on Sunday, July 13, and proposed "all of the above": the power to give the GSEs both liquidity and capital in amounts that would make clear to market participants that the U.S. government stood behind the obligations of these companies. He asked Congress to raise the GSEs' lines of credit; to authorize unlimited (subject to the statutory debt ceiling) direct Treasury purchases of GSE securities, including both their MBSs and their common stock, through the end of 2009, to ensure that the firms could fulfill their missions with respect to housing markets; and to give their regulator, OFHEO, the power of conservatorship and other authorities that the administration had long sought. The Treasury would insist on terms and conditions to protect the taxpayer if public money were ever put into the firms. These powers were requested with the idea that the firms' liquidity crunch reflected a lack of market confidence that a show of Treasury support could assuage—that standing behind the firms would calm market fears and avoid the need for a bailout. (The secretary's unfortunate phrasing, at a July 15 congressional hearing, about having a "bazooka" in terms of the financial ability to stand behind the firms was to be repeated constantly in the media in the months to come.)

The Fed authorized bridge lending to Fannie and Freddie while Congress worked on the legislation, which was enacted on July 30, 2008 (and which included the Hope for Homeowners program). Some market participants complained that the rescue did not distinguish between senior and subordinated debt but instead made both of them whole, whereas many participants had expected the subordinated debt not to be included within the rubric of a guarantee. However, the view at the Treasury was that simplicity and clarity were paramount (although, of course, clarity is sometimes in the eye of the beholder).

This effective hardening of the heretofore-implicit guarantee of the GSEs left mixed feelings among Treasury staff. A crisis had been forestalled with a flurry of weekend activity (soon to become a regular part of the Treasury workweek), but the outcome seemed to cement in place the awkward status of the GSEs and their ability to privatize gains and socialize risk by borrowing at advantageous terms under the shelter of a now-explicit government guarantee. Past Treasury departments across administrations had sought to remove the implicit guarantee, not to harden it. At a dinner in Cambridge, Massachusetts, on Thursday, July 24, 2008, to honor Martin Feldstein, outgoing president of the National Bureau of Economic Research, many people expressed to me directly their misgivings about what looked like a bailout, in which GSE bondholders and shareholders won and taxpayers lost. It was hard to disagree.

It turned out that Secretary Paulson had the same misgivings. The following Monday, July 28, he instructed Treasury staff to analyze the capital situations of the GSEs. To protect taxpayers in the case that an actual investment was needed in the future, he wanted to know first if these firms were solvent. The Treasury's Office of Domestic Finance engaged a top-notch team from Morgan Stanley to dig into Fannie and Freddie's books and assess their financial condition. While this was happening, it became apparent that the July 13 announcement and subsequent legislation had left markets uncertain about the status of the enterprises. The GSEs had access to private sector debt funding, although with increased costs, as the spreads on five-year Fannie benchmark agency debt above Treasuries rose from about 65 basis points in early June to 94 basis points on September 5, just before the firms were put into conservatorship. But the common stocks of the two firms continued to decline. Market participants were in effect saying that they (mostly) believed that the government stood behind the debt and guarantees on the MBSs, but were not confident that the firms were solvent. This was not Secretary Paulson's intent—he did not deliberately set up the GSEs to fail and get them into conservatorship. The weeks in July and August were tense ones within the Treasury, as markets deteriorated while waiting for more clarity on Fannie and Freddie. It looked to market participants as if there was no guidance, but this was because we were busy working—and Secretary Paulson was willing to suffer for a few weeks in order to have his next step come out right.

The Morgan Stanley team came back several weeks later in August with a bleak analysis: both Fannie and Freddie looked to be deeply insolvent, with Freddie the worse of the two. In light of the firms' well-publicized accounting irregularities of previous years, Treasury staff were especially amazed that the GSEs appeared to have made accounting decisions that obscured their problems. With receivership still an undesirable outcome because it would imply prematurely winding down the retained portfolio, the Treasury worked with the GSEs' regulator (formerly OFHEO, the July legislation having merged it with the Federal Housing Finance Board to create the Federal Housing Finance Agency, or FHFA) to set out an airtight case of insolvency that warranted putting the firms into conservatorship. The July legislation allowed FHFA to do this without consulting

Congress, although no one had contemplated actually using that power so rapidly. Even though the analysis from Morgan Stanley was clear, it took some time to bring the FHFA examiners on board—it seemed difficult for them to acknowledge that the firms they had long overseen had gone so wrong, and it would have been awkward for the head of FHFA to decide on the conservatorship over the objection of his senior career staff. It was also necessary to convince the management of Fannie and Freddie to acquiesce without a legal fight. There was no expectation of a problem with Freddie's management—the CEO had publicly expressed his fatigue with the whole situation—but Fannie appeared then to be in somewhat better financial shape and might reasonably have expected to be treated differently than Freddie. Ultimately, Secretary Paulson had a trump card: he could say in public that he could not in good conscience invest taxpayer money in these firms, and that would doubtless spark their demise. But in the end he did not have to play this card. In well-publicized meetings with Secretary Paulson, Chairman Bernanke, and FHFA Director James Lockhart, both firms acceded to conservatorship, which was announced on Sunday, September 7, 2008.

The Treasury announced three measures jointly with the conservatorship decision: so-called keepwells, under which the Treasury committed to inject up to $100 billion of capital each into Fannie and Freddie as needed to ensure their positive net worth; a Treasury lending facility if needed; and a program under which the Treasury would purchase the GSEs' MBSs in the open market. This last program was mainly symbolic—a demonstration by the Treasury that the obligations of the GSEs were "good enough for us" and should be seen as secure by the rest of the world. The U.S. government ended up as 79.9 percent owner of the GSEs, receiving preferred stock on terms that essentially crushed the existing shareholders. (The precise level of ownership was chosen in light of accounting rules that would have brought GSE assets and liabilities onto the government balance sheet at 80 percent ownership.)

The real action here was the two $100 billion keepwells, which were meant to effectuate the now-explicit guarantee of GSE debt and MBS coverage—they would provide just-in-time capital injections as losses were realized and ensure that Fannie and Freddie had the financial ability to service their debt and insurance obligations. The Treasury could not by law make GSE debts full-faith-and-credit obligations of the U.S. government—this could only happen through an act of Congress that changed the GSE charters. Unfortunately, the keepwells were not well explained by the Treasury, and it took some time for market participants to understand that they were the explicit guarantee—and even then, some observers questioned whether $100 billion was enough to cover possible losses at either firm. As with many decisions made quickly at the Treasury in this period, the figure of $100 billion did not receive considered discussion across the building and was eventually revised upward by the Obama administration.

The conservatorship arrangement left unanswered the question of the long-term status of Fannie and Freddie. This was by necessity, since any such decision required congressional action to amend the firms' charters. An unfortunate consequence, however, was that borrowing costs for the GSEs remained above those for Treasury debt. Even though the public balance sheet was effectively behind the firms, this could change in the future, and the spread over Treasuries seemed to reflect this uncertainty. The confusion over what the Treasury could and could not do was evident in the writings of outside observers. In his blog on November 25, 2008, for example, *New York Times* columnist Paul Krugman wrote, "the Bush administration, weirdly, has refused to declare that GSE debt is backed by the full faith and credit of the US government." Krugman wondered whether this reflected politics. No politics were involved: the Treasury did not do this because it was not legal. Although the criticism of the Bush administration was off target, the Treasury had not explained the situation clearly.

The long-term status of the GSEs remains at this writing to be decided by Congress. Each of the GSEs before conservatorship could be thought of as two related entities under one roof: a securitizer and monoline insurer that packaged and guaranteed mortgages with relatively good underwriting standards, and a hedge fund that leveraged the funding advantage from its implicit guarantee. Their retained portfolios were the embodiment of this positive carry and the source of the systemic risk, since scaling up the balance sheet with MBS purchases had driven the GSEs' massive borrowing. It was clear that the desired long-term outcome for the GSEs was to wind down the portfolios. Indeed, the agreements struck at the time of the conservatorship explicitly committed the firms to do so over time, starting in 2010. In the meantime, however, the portfolios were a tool with which to support the housing market, and the Treasury wanted there to be upward room for more MBS purchases so that homebuyers would not face higher interest rates. As a result, Treasury officials, including the secretary, did not talk directly about winding down the portfolios, out of fear that this would fluster markets and cause a spike in interest rates paid by the GSEs. This tension was not resolved until later in the year, with the November 25, 2008, announcement by the Fed that it would fund the GSEs directly by purchasing their debt and MBSs.

Treasury staff did draw up sketches of long-run plans for the GSEs, and Secretary Paulson spoke publicly on this topic in early January 2009. He favored turning the GSEs into a utility-like company, with private shareholders but government regulation. This preference seemed to be driven by a view that there would be substantial waste from the duplication involved with multiple GSEs, which was an approach favored by some at the Fed. A possible alternative would combine the two, with one or two GSEs running the automated networks by which banks originating mortgages sold conforming loans to the GSEs, and then a multitude of financial institutions competing with each other to securitize those loans into MBSs that would receive a government-backed guarantee. Such a restructuring would be along the lines of the present credit card market, which consists of a few large networks such as Visa and MasterCard but many credit card issuers in fierce competition.

The agreements struck with the GSEs took one small step in the direction of fostering future competition, in that the companies would have to pay a fee to the government for the explicit backing of the securities they issued starting in 2009. The details remain to be determined, but one could imagine over time allowing banks to pay such a fee and receive government backing on their securitizations of conforming loans. This would allow entry, which, one hopes, would drive innovation for the benefit of American homebuyers. Eventually the GSEs could become boutique financial firms rather than behemoths, or they might even one day acquire banks and become normal financial services firms. All of this, however, is for the future.

VIII. "Free Market Day": Lehman Brothers and AIG

The way Congressman Barney Frank put it at a hearing at which I testified on Wednesday, September 17, was that we should celebrate the previous Monday, September 15, as "Free Market Day," because on that day Lehman Brothers was allowed to fail and the free market to work. On the 16th, however, AIG had been bailed out, so, Chairman Frank continued, "the national commitment to the free market lasted one day," but we should celebrate that day.[7]

The decision not to save Lehman Brothers is perhaps the most hotly debated decision of the entire crisis. Secretary Paulson and Chairman

7. As quoted by the *Wall Street Journal* on blogs.wsj.com/economics/2008/09/17/barney-frank-celebrates-free-market-day/.

Bernanke have made the point that with the firm evidently insolvent, they had no authority to save it: the Treasury had no such authority whatsoever, whereas the Fed could provide liquidity but not capital. The Fed can, however, lend against collateral to its satisfaction, and so in principle it could have lent against Lehman's unencumbered assets—essentially what it did with AIG. This would not have saved Lehman—indeed, it would have concentrated losses on the rest of the firm—but it might have provided time for a more orderly dissolution. Indeed, there are estimates that the disorderly bankruptcy reduced the recovery value of the firm by billions of dollars. The view at Treasury, however, was that Lehman's management had been given abundant time to resolve their situation by raising additional capital or selling off the firm, and market participants were aware of this and had time to prepare. In the end there was no one prepared to buy Lehman with any realistic amount of government assistance as had been the case with Bear Stearns.

On Monday, September 15, it did not look like the outcome of Lehman's bankruptcy would be the start of the third and most difficult phase of the crisis (the first being from August 2007 to the collapse of Bear Stearns). What we did not realize would occur next were two things: the breaking of the buck by the Reserve Fund, and the reaction of foreign investors to the failure of Lehman. It is hard to see how the Treasury could have anticipated that the Reserve Fund money market mutual fund would incur such heavy losses from Lehman commercial paper and medium-term notes that it would break the buck, with its net asset value slipping below par. We might have better anticipated, however, that foreign investors were not prepared for Lehman to collapse—after all, there is an evident gulf in the understanding of policy actions even in moving from Washington to New York or Boston; this deficit of clarity grows only more severe across borders and oceans. Together these events led to a run on money market mutual funds, which in turn caused commercial paper markets to freeze up. If left unstopped, this would have led issuers of commercial paper to turn to their backup lines of credit—meaning that banks would have needed to massively fund these lines simultaneously under circumstances they had never contemplated, and then hoard capital against those lines. As discussed by Victoria Ivashina and David Scharfstein (2008), banks in the fall of 2008 did fund these lines as companies drew on them as a precautionary measure, but this played out over time rather than all at once.

From the Treasury's perspective, all this looked like a broad run on the financial system. The panic in the money market mutual funds led investors to pull out roughly $200 billion net from these vehicles from September 5 to 19—more than 7 percent of assets in the funds. In the face of these large-scale redemptions, money market mutual fund companies began to hoard cash rather than invest in wholesale funding instruments such as commercial paper, repo agreements, and certificates of deposit. As the wholesale funding market dried up, broker-dealers began cutting their credit lines to clients such as hedge funds and other counterparties. This in turn threatened to lead to fire sales of assets and a disorderly deleveraging, with potentially catastrophic consequences across the entire financial system.

The focus at the Treasury and the Fed was on the commercial paper market. As the three-month Treasury rate fell nearly to zero, the rate on overnight asset-backed commercial paper jumped from 2.4 percent on Friday, September 12, to 5.7 percent on Wednesday, September 17. Firms were reporting to the Treasury, however, that they could not obtain funds at all. It is hard to know how to evaluate this; economists instinctively believe that there is some interest rate at which lenders will lend, on a highly secured basis, to blue chip industrial companies, provided the latter are willing to pay. Other companies said they could issue commercial paper only at very short maturities: issuance of term commercial paper (80+ days), for example, fell from $13.7 billion on Friday, September 12, to $2.4 billion on Friday, September 19, and over 70 percent of commercial paper issued by financial institutions was at one- to four-day maturities, compared with only about 50 percent previously. One possibility is that there are transition costs in asset allocation decisions: once the money market mutual funds stopped buying commercial paper, there was simply no ready buyer to take their place—it would take time for other potential investors to observe rising yields, evaluate particular assets, and then buy. In the meantime, companies calling the Treasury worried about whether they would have the liquidity to make payroll.

Meanwhile in this chaotic week, AIG failed on Tuesday, September 16, and was kept afloat by emergency lending from the Fed. Treasury staff were sent to the New York Fed for weeks to negotiate the terms of the support package for AIG that was eventually announced on October 8.

If Monday, September 15, felt like a good day at the Treasury in that the market was allowed to work (and it was too soon to know the full adverse ramifications), Tuesday, September 16, when AIG was not allowed to fail, felt much the opposite. Saving AIG was not what anyone wanted, but at the time it seemed the only possible course of action. The belief at the Treasury and the Fed was that bankruptcy at AIG would have far-reaching and disruptive effects on the financial system and on American families, as failure of the parent firm disrupted the operating companies that provide insurance in the United States and around the world. AIG had $1 trillion in assets at the time of its crisis; the firm was one of the world's largest insurance companies, the largest property and casualty insurer in the United States, and a leading provider of insurance and annuity products and retirement services. Individual 401(k) retirement plans would have been at risk, because AIG insured the returns of large mutual funds. Nonfinancial businesses would also have come under pressure because AIG provided credit guarantees to bank loans, and thus its failure would have forced banks to raise capital. Moreover, money markets had even more exposure to AIG than to Lehman. In sum, AIG was larger, more interconnected, and more "consumer facing" than Lehman. There was little time to prepare for anything but pumping in money—and at the time only the Fed had the ability to do so for AIG. Eventually the AIG deal was restructured, with TARP funds replacing Fed lending, to give AIG a more sustainable capital structure and avoid a rating downgrade that would have triggered collateral calls. As time went on, it became clear that AIG was a black hole for taxpayer money, and perhaps a retrospective analysis will demonstrate that the cost-benefit analysis of the action to save AIG came out on the other side. But this was not apparent at the time.

IX. Launching the TARP

With markets in disarray, Secretary Paulson on Wednesday, September 17, set out three principles for Treasury staff in how to deal with the crisis:

1. *Simplicity.* Any policies adopted should be readily understood by markets.

2. *Actions should be decisive and overwhelming.* This was a lesson from the experience with the GSEs, where the initial July announcement left the situation unresolved.

3. *Actions must have the explicit endorsement of Congress.* The secretary made clear that a large-scale intervention would be undertaken as fiscal policy; he would not ask or expect the Fed to take on a massive bank rescue, and he would not look for a statutory loophole through which to commit massive amounts of public funds (for example, by reinterpreting the July housing bill to tap into the $300 billion that had been authorized but not used for the Hope for Homeowners program since the program was not yet in operation).

Treasury staff had worked late into the night on Wednesday, September 17, on a series of calls with staff from Fed headquarters and the New York Fed, to come up with options that included ways to add liquidity to the particular markets under stress and approaches to shore up the financial system broadly. That day already, the Treasury had announced the Supplementary Financing Program under which the Treasury would borrow, through special bill issues, to soak up cash on behalf of the Fed (a program that became redundant once the Fed was given the authority to pay interest on deposits), and the SEC had put into effect an emergency ban on short selling of stock of financial companies. Opinions about this latter action at the Treasury and other government agencies differed sharply: economists were skeptical that reducing liquidity in markets would be helpful, whereas those with market backgrounds thought it was important to short-circuit "predatory" behavior in the markets.

Liquidity options focused on money market mutual funds and the commercial paper market. After rapid consultations with industry participants, the Treasury announced on Friday morning, September 19, in a pre-market conference call, a temporary guarantee program for money market mutual funds to directly stem the panicked withdrawals. At the same time the Fed announced its Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, to provide money market funds with liquidity so that they could avoid fire sales of their assets in the face of redemption pressures. Fund managers were quite positive about the Treasury guarantee until they realized they would have to pay for it; most funds eventually participated, but not happily (and with no subsequent failures, the guarantee will be a moneymaker for taxpayers). There was incoming fire at the same time from banks, who (reasonably) complained that the guarantee put them at a competitive disadvantage against the money market funds. This became a familiar story: nearly every Treasury action had some side effect or consequence that we had not expected or had foreseen only imperfectly.

Other options included action by the SEC to reinstate the so-called uptick rule, which prohibits short selling of a stock when the price has just declined from one trade to the next, or to require disclosure on short positions, having the Fed allow investment banks to convert rapidly into bank holding companies (which Goldman Sachs and Morgan Stanley did the next weekend), or changes in accounting or tax rules to foster bank consolidation. Guidance on a related tax issue—the so-called section 382 rule on the use of tax credits from net operating losses of acquisitions—was released by the Treasury to some controversy later in September. The controversy arose because of reports that this action played a role in the acquisition of Wachovia by Wells Fargo; the guidance was repealed in the February 2009 stimulus bill. Everyone was aware that this was not the time to propose fundamental changes in the regulatory structure of the financial system, but it was important to ensure that any steps taken not conflict directly with long-term goals such as had been set out in the Blueprint.

The actions taken with respect to money market mutual funds and commercial paper seemed useful but incremental—it was a sign of the times that so drastic a step as using the Treasury's main source of emergency funding to put a blanket guarantee on heretofore-unguaranteed assets seemed incremental. What was still needed was action to get ahead of the downward market dynamic and broadly stabilize the financial system. The options were familiar from the "break the glass" work back in March and April: buy stakes in banks directly, buy the toxic assets, or dramatically expand the FHA and Hope for Homeowners programs to refinance loans and improve asset performance from the bottom up. Buying stakes in banks would constitute a "high powered" capital injection, whereas buying assets would add liquidity but also inject a wedge of capital to the extent that the price paid after the announcement of the program was higher than the price ex ante (because simply announcing an asset purchase program would boost asset prices).

Secretary Paulson and Chairman Bernanke went to Capitol Hill Thursday night, September 18, to tell congressional leaders that the problems in financial markets posed a severe threat to the economy, and that they wanted authority to buy the illiquid assets that were creating uncertainty about the viability of firms at the core of the financial system. Equity markets had rallied strongly that day even before the meeting, evidently sparked by afternoon comments from Senator Charles Schumer (D-NY) that the Treasury and the Fed were working on a "comprehensive solution" to the financial market difficulties. Senator Schumer had it exactly right—but no one at the Treasury could figure out what he actually knew when he spoke.

On Saturday, September 20, the Treasury sent Congress a "Legislative Proposal for Treasury Authority to Purchase Mortgage-Related Assets"—a three-page request for a $700 billion fund to be used over the following two years. The proposal sought maximum flexibility, allowing the secretary to determine the terms and conditions for purchases of "mortgage-related assets from any financial institution having its headquarters in the United States." In doing so, section 3 of the proposal instructed the secretary to "take into consideration means for (1) providing stability or preventing disruption to the financial markets or banking system; and (2) protecting the taxpayer," while section 4 required reports to Congress. Section 8 was to raise immense controversy, with its assertion that "Decisions by the Secretary pursuant to the authority of this Act are nonreviewable and committed to agency discretion, and may not be reviewed by any court of law or any administrative agency." The legislation eventually enacted—the Emergency Economic Stabilization Act of 2008—showed if anything that there had been a counterreaction, as it provided abundant layers of oversight, including by the Government Accountability Office, a new inspector general specially for the TARP, and a congressional oversight panel. Treasury staff were soon to venture that there would be more people working on TARP oversight than on the TARP itself. The initial proposal was meant purely as a starting point, not as a demand. In retrospect, however, the sparseness of those three pages was a communications mistake that foreshadowed later recriminations.

Eventually the lengthier EESA was negotiated with Congress, but the core was the same: the Treasury would have broad authority to purchase $700 billion of assets through the TARP, with the money split into two equal tranches (technically the Treasury had access to only an initial $250 billion, but an additional $100 billion could be obtained without a further role for Congress). Most of the negotiation was over issues relating to executive compensation and warrants. Members of Congress eventually settled for fairly modest restrictions on compensation (their main focus), but congressional staff insisted that the government should receive warrants in the firm selling assets to the government rather than warrants relating to the future performance of the specific assets purchased. Congressional staff also insisted on a provision to guard against "unjust enrichment," which was defined as the Treasury buying an MBS for more than the seller had paid for it. This effectively made it impossible for, say, a hedge fund to buy assets from a bank before the TARP got up and running and later sell those assets to the Treasury. This was counterproductive; it ran precisely counter to the goal of using the TARP to get illiquid MBSs off bank balance sheets. But this obvious point fell on deaf ears on the Hill.

The TARP proposal was voted down in the House of Representatives on September 29, and an amended bill was then enacted on October 3. President Bush signed the bill on arrival and then came over to the Treasury to give a pep talk to staff assembled in the department's Diplomatic Reception Room. Always gracious, the president had warm words for the Treasury team, including recognition of the Treasury dining room staff, who had become part of the weekend efforts.

While Congress debated the legislation, markets got worse—the S&P 500 index fell almost 9 percent the day the House rejected the bill—and conditions continued to deteriorate after EESA was enacted. One-month and three-month LIBOR rates rose another 100 basis points after EESA was approved, and stock market volatility as measured by the VIX went up from about 30 percent on September 19 to 45 percent on October 3 and 70 percent on October 10. After EESA was approved, the amount of outstanding commercial paper fell by another $160 billion, or nearly 10 percent, and financial institutions were issuing nearly 90 percent of their commercial paper on a one- to four-day basis. The Dow Jones Industrial Average fell 18 percent, or almost 1,900 points, the week after EESA was approved.

It is hard to remember from the vantage point of mid-2009, when the United States and other nations are in the midst of a severe economic downturn, but in late September and early October of 2008 it was a challenge to explain to people that what was happening in credit markets mattered for the broad economy—that it would affect the proverbial Main Street, not just lower Manhattan. By mid-October, however, everyone understood that the crisis was real. Families stopped spending, while firms stopped hiring and put investment projects on hold. The economy had been deteriorating since July after having been in a sideways grind for the first half of 2008. Activity pitched slightly downward by some economic measures, but GDP growth remained positive in the first and second quarters, even though growth was not strong enough to maintain positive job growth or prevent rising unemployment.

In October and beyond, everyone got the message to pull back on spending all at once—and the economy plunged. For some time within the Treasury, we had been analyzing statistical relationships between financial markets and the real economy. Back in February we had predicted in internal analysis that the unemployment rate, which had been only 4.9 percent in January, would reach 5.5 to 6 percent by year's end as the economy slowed, but would hit 6.5 percent or more if the problems in financial markets became worse than expected. That was the limit of the ability of our (linear) models to predict the worst, although we acknowledged and explained this limitation in the prose of the accompanying memos. In fact, the unemployment rate reached 7.2 percent in December 2008, en route to 8.1 percent by February 2009, with yet-higher rates to come.

Many factors were at work to dampen consumer and business spending, including the weak and deteriorating job market and huge wealth losses in both housing and equity markets. Yet the way in which the TARP was proposed and eventually enacted must have contributed to the lockup in spending. Having long known that the Treasury could not obtain the authorities to act until both Secretary Paulson and Chairman Bernanke could honestly state that the economic and financial world seemed to be ending, they went up and said just that, first in a private meeting with congressional leaders and then several days later in testimony to Congress on September 23 and 24. Americans might not have understood the precise channels by which credit markets would affect the real economy, but they finally realized that it was happening. And whether or not they agreed with the proposed response of buying assets with the TARP, they could plainly see that the U.S. political system appeared insufficient to the task of a considered response to the crisis. Surely these circumstances contributed to the economic downturn, although the extent to which they did remains for future study. A counterfactual to consider is that the Treasury and the Fed could have acted incrementally, with backstops and a flood of liquidity focused on money markets and commercial paper, but without the TARP. With financial institutions beyond Lehman weakening as asset performance deteriorated, it seems likely that the lockup would have taken place anyway, and perhaps sooner than it did.

The proposal to buy assets was met with substantial criticism from academic economists, with a leading source of skepticism being faculty at the University of Chicago's Booth School of Business (where, ironically, I taught a course on money and banking to MBA candidates in the spring of 2009 after leaving the Treasury). There was little public defense of the proposal—instead, the Treasury's efforts were aimed mainly at the 535 members of Congress whose votes were needed. These were difficult issues to explain to the vast majority of Americans who had not yet felt the direct impact of the credit market disruption in their daily lives, yet it strikes me as a fair criticism that the Treasury did not try hard enough.

So far as I know, I provided the only detailed public defense of the Paulson plan at the time that addressed criticisms from both academic economists and market participants. In a September 25, 2008, posting on Harvard economics professor Gregory Mankiw's blog, I addressed three common concerns about the Treasury's proposal to buy assets.[8]

The first criticism was that the only way the Treasury plan could work was if the Treasury intentionally overpaid for assets. Implicit in this criticism was either that the Treasury would not overpay, and thus the plan would not work, or that the Treasury intended to bail out financial institutions (starting, the cynics inevitably said, with the secretary's former firm, Goldman Sachs). This is simply wrong in both directions. At the Treasury, we were already working hard to set up reverse auctions with which to buy

8. "A Defense of the Paulson Plan," Greg Mankiw's Blog, September 25, 2008. gregmankiw.blogspot.com/2008/09/defense-of-paulson-plan.html.

structured financial products such as MBSs, focusing on mechanisms to elicit market prices. On this we received a huge amount of help from auction experts in academia—an outpouring of support that to us represented the economics profession at its finest. There was no plan to overpay. The announcement of the proposal (or rather, Senator Schumer's announcement) had lifted asset prices by itself. If the Treasury got the asset prices exactly right in the reverse auctions, those prices would be higher than the prices that would have obtained before the program was announced. That difference means that by paying the correct price, Treasury would be injecting capital relative to the situation ex ante. And the taxpayer could still see gains—say, if the announcement and enactment of the TARP removed some uncertainty about the economy and asset performance, but not all. Then prices could rise further over time. But the main point is that it is not necessary to overpay to add capital.

The second criticism of the plan to buy assets was that in order to safeguard the taxpayer's interests, the warrants in the plan needed to give the government additional protection (that is, it should pay a lower price ex post) if the assets being purchased turned out to perform markedly worse than was contemplated at the time of the transaction. This would have been a valid point had the warrants in question been specific to the assets being purchased. But this was not the case—as already noted, congressional staff had insisted instead that the warrants be on the firms selling the assets, not on the assets themselves. Thus, the point being made by academic and other critics was a non sequitur. Instead, warrants proved to be a huge hassle for the auctions in that they diluted the price signal and thereby confused the bidding.

This was a straightforward application of the Modigliani-Miller theorem. Rather than bid to sell assets such as MBSs at a particular price to the Treasury, firms would have to bid to jointly sell both MBSs and stakes in the selling firm. If the warrants and assets were identical across sellers, the price of the assets would simply adjust to net out the value of the warrants. Modigliani-Miller implies that the price of the asset (assuming the auction gets it right) will adjust to offset the value of any warrants the Treasury receives. In this case of a reverse auction, imagine that the price of an asset is set at $10. If the Treasury instead demands warrants for future gains of some sort, then the price will rise by the expected value of the warrants. If that value is, say, $2, the Treasury will pay $12 total for the asset and the warrants.

Working with academic experts, we came up with a reverse auction mechanism that would go a long way to make for apples-to-apples comparisons across different MBSs. The auction would not be perfect—we knew that it was possible only to minimize adverse selection, not to eliminate it. Firm-specific warrants confounded this, since even if the MBSs being offered by seller A were identical to those offered by seller B, the warrants on firms A and B would not be identical. (We considered using penny warrants—essentially common stock—to get around the problem but concluded that this was contrary to congressional intent.) All of this resulted from the insistence in Congress on this type of warrant. Ironically, critics of the September blog posting asserted that the Treasury did not understand the Modigliani-Miller theorem, when in fact it was the critics who did not understand the nature of the warrants specified by Congress.

The third criticism of the original plan to purchase assets was that it would be better to inject capital into banks—to buy parts of institutions instead of the assets they held. Capital injections were allowed even in the initial three-page proposal, under which Treasury could purchase any mortgage-related assets, including shares of companies that originate mortgages. The problem with this criticism is that Secretary Paulson never would have gotten legislative authority if he had proposed from the start to inject capital into banks. The secretary truly intended to buy assets—this was absolutely the plan; the TARP focused on asset purchases and was not a bait-and-switch maneuver to inject capital. But Secretary Paulson would have gotten zero votes from Republican members of the House of Representatives for a proposal that would have been portrayed as nationalizing the banking system. And Democratic House members would not have voted for the proposal without the bipartisan cover of votes from Republicans. This was simply a political reality—and a binding constraint on the Treasury. The calls from academics to inject capital were helpful, however, in lending support for the eventual switch to capital injections (even though at times the vitriolic criticism was frustrating in that it was so politically oblivious).

A similar calculus applies to suggestions that holders of bank debt should have been compelled to accept a debt-for-equity swap. As Luigi Zingales (2008, p. 4) notes, debt-for-equity swaps could "immediately make banks solid, by providing a large equity buffer." All that would be required, according to Zingales, was a change in the bankruptcy code. A major change to the bankruptcy law had previously been enacted (for better or for worse, depending on one's point of view) with the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005, but this was the culmination of years of legislative debate. Thus, the idea of a further instantaneous change in the bankruptcy code was unrealistic. Indeed, efforts to make such changes in the middle of the crisis would have reopened the debate over the 2005 act, along with controversial provisions such as the mortgage cramdown. The simple truth is that it was not feasible to force a debt-for-equity swap or to rapidly enact the laws necessary to make this feasible. To academics who made this suggestion to me directly, my response was to gently suggest that they spend more time in Washington.

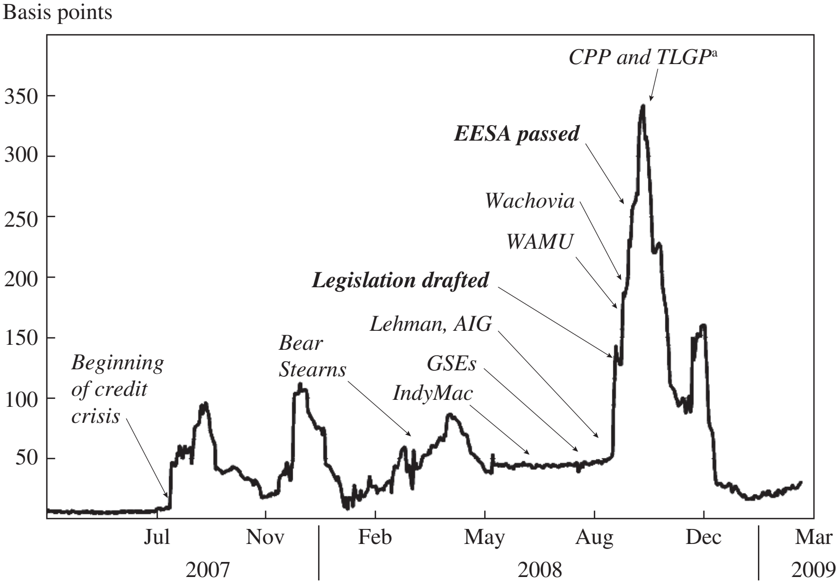
X. From Asset Purchases to Capital Injections

Secretary Paulson's intent to use the TARP to purchase assets reflected a philosophical concern with having the government buy equity stakes in banks: he saw it as fundamentally a bad idea to have the government involved in bank ownership. From the vantage point of early September, it still looked like buying $700 billion of assets would be enough to settle the markets: there were about $1 trillion each of whole loans and structured products such as MBSs and CDOs on U.S. firms' balance sheets, so that $700 billion would have been sufficient to add liquidity, improve price discovery by closing bid-ask spreads, and inject some measure of capital relative to the situation ex ante.

As markets continued to deteriorate after the enactment of EESA, however, Secretary Paulson switched gears and came to favor injecting capital, since he well understood that directly adding capital to the banking system provided greater leverage in terms of providing a buffer to ensure the viability of banks against further losses from their rapidly souring assets. Confidence in the banking system continued to deteriorate, with the one-month LIBOR-OIS spread (the difference between LIBOR and the overnight index swap rate), for example, rising from around 250 basis points when EESA was enacted to nearly 350 basis points in the first full week of October, just before the three-day Columbus Day weekend (figure 2). With confidence rapidly ebbing in the banking system, the secretary, in consultation with the Fed chairman and New York Fed President Timothy Geithner, instructed the "deal team" at the Treasury to prepare term sheets that spelled out the financial arrangements under which capital would be injected into banks.

Discussions began as well with the FDIC around the middle of the week of October 5 about guarantees on bank debt—an idea that we were hearing about from Wall Street economists and which had some support at both the Treasury and the Fed. As Pietro Veronesi and Zingales (2009) have shown, these guarantees involved a huge benefit for market participants—most of the "gift" calculated by Veronesi and Zingales arises from the guarantees.

Figure 2. One-Month LIBOR-OIS Spread, April 2007–March 2009



Source: Kashkari (2009).
a. TLGP, Temporary Liquidity Guarantee Program (FDIC).

No one at the Treasury or the Fed was happy about the prospect of giving blanket guarantees, but in the midst of what appeared to be a renewed run on the banking system, this blunt instrument was seen as essential to stopping the run. This highlights the constraint that the policymaking process must be done in real time even while the rush of events continues.

Treasury staff had been working on plans for capital injections for some time, focusing on matching programs under which the Treasury would invest on terms similar to what private investors received in exchange for equal investments in banks. In early October, however, banks were neither able nor willing to raise private capital on the terms available from private investors—if any were to be found. Warren Buffett had extracted a premium for investing in Goldman Sachs, but other firms did not have even that possibility available to them. In the face of these circumstances, the Treasury instead worked with bank regulators and outside counsel to develop term sheets for a stand-alone investment by the Treasury; this work went from not far past the starting line to completion in just four days, from Thursday, October 9, to Monday, October 13. It was on that Monday that the CEOs of the nine largest American banks came to the

Treasury to meet with Secretary Paulson, Chairman Bernanke, SEC Chairman Christopher Cox, and others to be told about and ultimately accept capital injections from the TARP in the form of preferred stock purchases. This was called the Capital Purchase Program, or CPP.

An important consideration with regard to the terms of the capital injections was that the U.S. executive branch has no authority to force a private institution to accept government capital. This is a hard legal constraint. The government can take over a failing institution, but this is done on a one-by-one basis, not en masse, and is not the same as injecting capital into an institution that is healthy in order to guard against future asset problems. Therefore, to ensure that the capital injection was widely and rapidly accepted, the terms had to be attractive, not punitive. In a sense, this had to be the opposite of the "Sopranos" or the "Godfather"—not an attempt to intimidate banks, but instead a deal so attractive that banks would be unwise to refuse it. The terms of the capital injections were later to lead to reports that the Treasury had "overpaid" for its stakes in banks, which is true relative to the terms received by Warren Buffett. But this was for a policy purpose: to ensure broad and rapid take-up.

The terms of the CPP—the TARP's program to put capital into "good banks"—allowed banks to sell preferred stock to the Treasury in an amount equal to up to 3 percent of their risk-weighted assets. The annual interest rate on the preferred shares was 5 percent for five years and then increased to 9 percent, meaning that banks would have a substantial incentive to pay back the money at that point. This made the funds more of a five-year bridge loan than high-quality capital. EESA was about distressed assets, which might have seemed at odds with the notion of the CPP as a "good bank" program, but the idea was that the low level of confidence among banks, as indicated by the soaring LIBOR-OIS spread, meant that the whole financial system was under stress. Capital injections would foster stability in banks in particular, and thus in the financial system as a whole, initially by ensuring that banks had the capacity to lend against a sufficient capital buffer and would not have to hunker down and hoard capital. The ultimate goal was to improve confidence in the system so that over time private capital would again invest in the banking system.

Other terms were similarly aimed at ensuring broad uptake: the Treasury wanted no part of running banks, so the preferred shares would be nonvoting except when an issue affected an entire class of investors in a way that would adversely affect the taxpayer's interest. The Treasury received warrants with a 10-year maturity that could be exercised at any time, with an aggregate market value equal to 15 percent of the amount of the preferred stock; the strike price on the warrants equaled the previous-20-day-average stock price for each institution on the day of preliminary approval of the investment. Warrants in this context made sense in that they allowed the taxpayer to participate in any upside from increased stability in the financial system. Banks were allowed to continue to pay dividends (but not to increase them); this provision in particular drew criticism, but it, too, was aimed at ensuring broad take-up of the capital.

The capital injections included rules meant to address not just the letter but also the spirit of EESA, which required participating financial institutions to meet "appropriate standards for executive compensation and corporate governance," while avoiding such burdensome restrictions that banks would not participate or would find it difficult to attract and retain key personnel. It is worth spelling out these restrictions in some detail to make clear that the TARP from the start had reasonable provisions in place to protect taxpayers—this might not have seemed the case to someone landing in Washington in March 2009 and observing the president of the United States competing with members of Congress over who could most angrily denounce the compensation agreements at AIG (which, it should be noted, were outside the CPP).

Each bank's compensation committee would be required to review incentive compensation features each year with the CEO, the CFO, and the three highest-paid executives to ensure that contracts did not encourage unnecessary and excessive risk, and to certify annually that this had been done. Incentive payments for senior executives could be taken back after the fact if it was found that they had been made on the basis of materially inaccurate statements of earnings or gains or performance criteria. These rules applied to more executives than section 304 of the Sarbanes-Oxley Act (the provision that required executives to return bonuses in the event of an accounting error) and would not be limited to financial restatements. Banks could not provide senior executive officers with golden parachute payments; severance payments were capped at three times base salary, calculated as a moving average of each officer's taxable compensation over the previous five years. And recipients of TARP capital would have to agree to limit the income tax deduction of compensation paid to each senior executive to $500,000 instead of $1 million for as long as the Treasury held a capital stake in the bank. This was not a tax rule but instead a bilateral contract between the Treasury and the firm. In sum, the TARP did not involve the Treasury in the details of setting pay, nor did it outright ban bonuses or severance pay, but it did include a number of provisions aimed at ensuring that taxpayer investments were not squandered through excessive executive compensation.

As has been widely reported, most (but not all) of the nine CEOs needed little persuasion to accept the capital investments on Monday, October 13. Nearly 8,500 banks were eligible to receive TARP funds through the CPP, but these nine alone accounted for close to half of both the more than $8 trillion of deposits and the more than $13 trillion of assets in the U.S. banking system. In contrast, the bottom 70 percent of banks all together accounted for only about 5 percent of both total assets and total deposits. It would take time for the Treasury to inject capital into these thousands of banks. The combined actions of that Monday—the FDIC guarantee and the injections into the top nine banks—stabilized the financial sector, as demonstrated by the LIBOR-OIS spread falling back to 100 basis points (figure 2). Although this seemed like progress, it was still twice the spread that had prevailed before Lehman's failure, suggesting that market participants were still not reassured about the soundness of financial institutions. Subsequent events were to prove their doubts correct.

EESA had created a new Office of Financial Stability within the Treasury, which Neel Kashkari was appointed to head as interim assistant secretary (he had been confirmed by the Senate earlier in 2008 to be an assistant secretary for international affairs). The office borrowed personnel from across the government and brought in experts from the private sector to help get the CPP up and running. The details of the process are beyond the scope of this paper, but suffice it to say that TARP staff, working in concert with the federal bank regulators, worked diligently and effectively: a January 27 press release from the Treasury noted that the CPP team had made capital injections of $194.2 billion in 317 institutions in 43 states and Puerto Rico since Columbus Day. President Obama was to tell Congress on February 24, 2009, that he was "infuriated by the mismanagement and the results" of the assistance for struggling banks. His actions, however, belied the words on the teleprompter—the Office of Financial Stability was kept essentially whole through the presidential transition and beyond.

XI. The Decision to Call Off Asset Purchases

Of the first $350 billion of the TARP, $250 billion was allocated to the CPP, which was enough for all banks that might potentially apply to get capital equal to up to 3 percent of their risk-weighted assets. It was already clear that part of the TARP would be needed to restructure the federal rescue of

AIG, since the company needed capital rather than liquidity, and this implied that with the TARP now available, the Treasury should take this operation over from the Fed (which was done on November 10, 2008).

Financial market conditions had improved since the launch of the CPP and the announcement of other actions including additional Fed facilities aimed at money markets and commercial paper issuance. But credit markets were still disrupted—and the implosion of business and household demand as output fell and the labor market sagged would make things worse.

Treasury staff turned to the task of figuring out how to allocate the remainder of the TARP, a process that ultimately led Secretary Paulson to announce, on November 12, 2008, that he would not use the TARP for its original purpose of purchasing assets. This decision ultimately came down to the fact that the TARP's $700 billion looked insufficient to buy assets on a scale large enough to make a difference while at the same time holding in reserve enough resources for additional capital programs that might be needed. What we did not fully see in late October and early November was that the Federal Reserve's balance sheet could be used to extend the TARP. This was done in late 2008 and early 2009, with ring fence insurance applied to assets held by Citigroup and Bank of America, and then on a larger scale with the Term Asset-Backed Securities Loan Facility (TALF) announced in late 2008 and the Public-Private Investment Funds announced in 2009.

We had reverse auctions to buy MBSs essentially ready to go by late October 2008—including a pricing mechanism—but faced a decision as to whether we had the resources left in the TARP to implement them. We figured that at least $200 billion was needed for the program to make a difference. With credit markets still in worse shape than before the TARP had been proposed, it seemed more important to reserve TARP resources for future capital injections, including the wherewithal to act in the face of further AIG-like situations. Secretary Paulson therefore decided to cancel the auctions. Another factor in this decision was simply time: the first reverse auction to buy MBSs might have taken place in early December but would have been small—perhaps a few hundred million dollars—while we became comfortable with the systems. The auctions would have ramped up in size but still would likely have remained at $5 billion or $10 billion a month, meaning that it could have taken two or more years to deploy the TARP resources in this way.

A concern of many at the Treasury was that the reverse auctions would indicate prices for MBSs so low as to make other companies appear to be insolvent if their balance sheets were revalued to the auction results.[9] This could easily be handled within the reverse auction framework, however: many of the individual securities are owned by only a small number of entities, so Treasury would not have purchased all of the outstanding issues of any security such as an MBS. The fraction to be purchased thus represented a demand shift—we could experiment with the share of each security to bid on; the more we purchased, the higher, presumably, would be the price that resulted. But this was yet another reason why the auctions would take time—and why to some at the Treasury the whole auction setup looked like a big science project. Further delaying the auctions was a procurement process that left us with an outside vendor that was supposed to run the auctions but whose staff did not seem to understand that the form of the auction mattered crucially, given the complexity of the MBSs and the ultimate goal of protecting the taxpayer (although, to be fair, the vendor was receiving mixed signals from within the Treasury as well). Warrants and executive compensation restrictions played havoc with setting up the auctions. For executive compensation, the administrative systems had to be able to detect, for each of the many firms (which often had many subsidiaries), when the total securities purchased crossed the congressionally determined dollar amounts at which the restrictions kicked in. And finally, the firm-specific warrants complicated the auctions, since as noted above, they confounded the effort made in the reverse auctions to ensure a level playing field across assets being offered for sale by different firms.

Despite all this, by the last weekend of October, the auction team returned from a day of meetings in New York on Sunday, October 26, feeling that the asset purchases could be done, first for MBSs and then later for whole loans (for which the idea was to create "artificial MBSs" out of a random selection of the whole loans offered by banks). We would have tried two auction approaches, one static and one dynamic—the latter approach is discussed by Lawrence Ausubel and Peter Cramton (2008), who were among the academic experts providing enormous help to the Treasury in developing the reverse auctions.

Meeting at the Treasury on Sunday evening, October 26, Treasury senior staff and the secretary focused on the key question of whether to proceed with asset purchases or instead to put that work on hold and focus on additional programs to inject capital and on the nascent securitization project

9. In contrast to the TALF, and to the Public-Private Investment Program announced in March 2009, the reverse auctions involved did not provide financial institutions with low-cost financing or downside risk protection, both of which effectively constitute a subsidy.

that would use TARP money to boost key credit markets directly (and which eventually turned into the TALF). At another meeting the following Sunday, November 2, senior staff and the secretary went through the options about the uses of the remaining money in the first part of the TARP and the $350 billion in the second tranche.

By the time of this second meeting, the economy had deteriorated and the tide of public opinion had begun to turn against the TARP, so much so that there were real doubts as to whether Congress would release the second stage of TARP funds. We knew that to have a chance, there had to be a well-developed set of programs to account for the money. The Treasury had to be able to explain what it was doing and how the programs fit together—never our strength. There could not be another instance of asking for money to do one thing and then using it for another as had happened with the first part of the TARP.

The objectives that the TARP needed to accomplish were, in broad strokes, to continue to stabilize the financial system and avoid systemic meltdown; to improve credit markets and facilitate stronger demand by consumers and businesses; to protect taxpayers; and to help homeowners. To meet these objectives, there were several possible uses of TARP funds in late October and early November:

—More capital for banks and nonbanks, including one-time situations such as systemically significant failing institutions and nonfailing financial firms other than banks. With regard to nonbanks, proposals were on the table to inject capital into the broader financial sector, including life insurers, municipal bond insurers, and private mortgage insurers. Resources for further capital would also constitute "dry powder" in case of unforeseen situations.

—Asset purchases to buy illiquid MBSs and whole loans.

—Foreclosure prevention or forward-looking actions to lower mortgage rates and thereby boost housing demand. This category included ideas such as directly funding the GSEs to buy down interest rates for homebuyers, something that the Fed eventually put into effect with its purchases of GSE debt and MBSs.

—Direct assistance to unplug securitization channels, which had been locked up since August 2007 but had previously provided financing for auto loans, credit cards, student loans, commercial real estate, and jumbo mortgages. This nascent "securitization project" eventually grew into the TALF—a centerpiece of the programs in effect in 2009.

The TARP was looking undersized against these competing alternatives, particularly as the slowing economy began to have a noticeable second-round impact on the financial system. Internal estimates by the New York Fed of bank losses and capital raised suggested that banks faced a capital hole above and beyond the initial $250 billion CPP of perhaps as much as $100 billion in the case of a moderate recession and perhaps another $250 billion or more in a severe recession. These would be in addition to hundreds of billions of dollars in losses among U.S. nonbank financial firms such as hedge funds and insurance companies.

The decision to cancel the asset purchases was made on October 26 with this in mind. Instead, the focus was to be on developing the securitization project and a second capital program with a private match. There were some continued discussions of possible whole loan purchase programs. At even a modest scale, this activity would have allowed the secretary to say that he was fulfilling his initial promise to buy toxic assets—the bad mortgages—directly and then to address foreclosures by modifying the loans. Again, however, the decision was made that it was more important to husband the resources.

With the work on asset purchases set aside, Treasury staff worked intensely during the week between October 26 and November 2 to flesh out proposals for the remaining uses of the TARP: more capital, assistance for securitization, and foreclosure prevention. To unlock the second $350 billion of the TARP, we realized that $50 billion of it would have to be used for a foreclosure prevention effort. Helping homeowners had been part of the TARP's original mandate. Section 109(a) of EESA specified that:

> To the extent that the Secretary acquires mortgages, mortgage backed securities, and other assets secured by residential real estate . . . the Secretary shall implement a plan that seeks to maximize assistance for homeowners and use the authority of the Secretary to encourage the servicers of the underlying mortgages, considering net present value to the taxpayer, to take advantage of the HOPE for Homeowners Program under section 257 of the National Housing Act or other available programs to minimize foreclosures. In addition, the Secretary may use loan guarantees and credit enhancements to facilitate loan modifications to prevent avoidable foreclosures.

This language made sense in the context of buying whole loans and MBSs: the Treasury could modify the whole loans it purchased or encourage servicers to modify loans for mortgages in securitizations where the Treasury owned a large share of the MBS structure. But the EESA language never contemplated direct spending to subsidize modifications such as were occurring under the FDIC insurance loss-sharing proposal and the interest rate subsidy. Under EESA, the TARP was to be used to purchase or guarantee troubled assets. Implementing a foreclosure avoidance plan under the law would require the Treasury to intentionally purchase a loss-making asset, where the loss was then structured, using financial engineering, to turn into the subsidies to the parties for taking the desired actions to avoid foreclosure (as either insurance payouts or interest rate subsidies). This was hugely ironic, since at the same time that the Treasury was being pushed to use TARP resources for foreclosure avoidance, we were being criticized for having overpaid for the preferred shares in banks.

From the secretary's point of view, it was essential to husband the TARP resources to use to shore up the financial sector. By this time he was less adamant against crossing the line and using public money for foreclosure avoidance, but he did not want it to be done with TARP money. As discussed previously, however, Congress did not appear eager to record a vote that transparently spent money on foreclosure avoidance: members wanted the outcome but not any potential blame for a bailout of "irresponsible" homeowners (a reasonable concern in light of the political backlash that ensued when the Obama administration announced that it would implement the interest rate subsidy proposal).

By early November it was becoming increasingly clear that what we were saving the "dry powder" for would include addressing the crisis at the automobile companies. A group of Treasury staff had worked with the Commerce Department on auto industry issues from Columbus Day on. Indeed, I went over to the Commerce Department building that Monday with a group from Treasury to meet with General Motors management. Walking out the south side of the Treasury building around noon, we strode past the television cameras that had assembled to get shots of the nine bank CEOs, whose pending arrival at Treasury had by then become known to the press.

At a November 12 speech to the assembled press, Secretary Paulson formally announced that he would not be using the TARP to buy assets. The secretary fully understood that canceling the auctions would make it seem as if he was switching course yet again—first in changing from asset purchases to capital injections, and then in canceling the asset purchases altogether. He was willing to take the criticism, however, as he viewed it as essential to keep the resources available for more capital injections. The problem was that the capital program that was slated to form the core of the second wave of TARP programs was never developed. Instead, events again overtook the Treasury as problems at Citigroup and the U.S. auto companies demanded attention.

XII. Ring Fence Insurance Schemes

Two weeks later, on November 23, 2008, the Treasury, the Fed, and the FDIC jointly announced that Citigroup was being given another $20 billion of TARP capital (on less generous terms than the CPP but not as onerous as those faced by AIG before the TARP was available), and that the three federal agencies would provide guarantees against losses on a $306 billion pool of Citi assets. The Treasury put up a modest amount of TARP money as a second loss position, the FDIC took the next set of losses, and the Fed then took the rest of the downside. This position of the Treasury reflected the language of section 102 of EESA, which counted each dollar of gross assets insured by the TARP as a dollar against the $700 billion allotment. This meant that it was most efficient from a TARP perspective for the Treasury to take an early loss position and provide coverage of a narrow band in the asset structure with a high probability of loss. The Fed could then use its balance sheet to take on the rest of the risk.

The crucial new development in this use of TARP resources was the use of the Fed's balance sheet to effectively extend the TARP beyond $700 billion; the Fed decided that having the Treasury ahead of it in a sufficient loss position provided the credit enhancement for it to take further downside risk. As had been the case with the Bear Stearns transaction, it took some time for the arrangement to be understood in Washington. The transaction, it turned out, did not appear to stabilize Citigroup. This could have reflected a number of reasons, including that the pool of covered assets was still modest compared with a balance sheet of nearly $2 trillion, that the Treasury did not provide details of the assets within the ring fence, and perhaps that many market participants saw the firm as deeply insolvent.

A key insight, however, is that underpricing insurance coverage is economically similar to overpaying for assets—but turns out to be far less transparent. This insight underpins both the TALF and the bank rescue programs announced by the Obama administration in March 2009. The federal government is effectively providing potential buyers of assets in either program with a two-part subsidy of both low-cost financing and low-cost insurance. This federal contribution then helps to close the bid-ask spread and restore functioning in illiquid markets.

From the perspective of the Treasury in November 2008, the second Citi transaction meant that we had fallen behind the market and were back into reactive mode. Moreover, the downside insurance appeared to give rise to moral hazard, as Citi announced its support for the mortgage cramdown proposal. Many within the Treasury viewed this as an artifact of the transfer of risk to the public balance sheet inherent in the nonrecourse financing behind the ring fence insurance—Citi could make this politically popular offer because taxpayers ultimately were on the hook for the losses. A feeling of resignation likewise marked the work by Treasury staff on a similar ring fence insurance scheme and additional TARP capital promised to Bank of America late in 2008. Treasury staff nonetheless worked intensely until the transaction was formalized on January 16, 2009, the last business day of the Bush administration.

In contrast, the use of the TARP to support the auto companies was straightforwardly political: Congress did not appear to want to take on the burden of writing these checks, and President Bush did not want his administration to end with the firms' bankruptcies. A concern in the administration was that the rapid collapse of the automakers would have severe adverse consequences for an economy that was already staggering. With the incoming administration refusing to coordinate policy with regard to automakers, TARP funds were used to provide the firms with enough breathing space to give the next team a chance to address the situation.

Using TARP to support unsustainable firms is akin to burning public money while industry stakeholders arrive at a sustainable long-term arrangement. This appears to be the American approach to systemically significant "zombie" firms—to use public resources to cushion their dissolution and restructuring.

XIII. Evaluation and Conclusion

There is something of a playbook (to again use a football metaphor) for dealing with a banking crisis. The steps are familiar from previous crises, such as the Swedish bank crisis in the early 1990s:

—Winnow the banking system by putting insolvent institutions out of business (including through nationalization where a buyer is not at hand). The key is to avoid supporting zombie firms that squander resources and clog credit channels. This was done to a modest degree with the decisions made by the federal bank regulators and the Treasury regarding which institutions would receive money from the TARP under the CPP. The denial of funds to National City Bank and its acquisition by PNC Bank, however, set off a firestorm of criticism that banks were using their TARP funds for mergers rather than to support lending. This criticism is misguided; it is fundamentally good for everyone when a strong bank that is in a position to boost lending and serve its community takes over a weak one that is not in that position. But this point was lost in October and onward. In any case, the furor revealed that there was no prospect of putting out of business a large number of banks.

—Recapitalize the surviving banks to ensure that they have a buffer against further losses. The TARP was able to do this in a broad and rapid way. Notwithstanding President Obama's assertion to the contrary, the CPP appears as of this writing to be a salient success of the TARP.

—Resolve uncertainty about the viability of surviving banks by either taking away or "disinfecting" their toxic assets, for example through ring fence insurance. The near-term goal is to avoid having banks hunker down and ride out the uncertainty, but instead to give them the confidence to put capital to work. Over time, the goal is to bring about conditions under which private capital flows back into the banking system.

I would add a fourth play, which is to ensure continued public support for the difficult decisions involved in plays one to three. An honest appraisal is that the Treasury in 2007 and 2008 took important and difficult steps to stabilize the financial system but did not succeed in explaining them to a skeptical public. An alternative approach to this challenging necessity is to use populist rhetoric and symbolic actions to create the political space within which the implicit subsidies involved in resolving the uncertainty of legacy assets can be undertaken. It remains to be seen whether this approach will be successful in 2009.

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Comments and Discussion

COMMENT BY

RENÉ M. STULZ This paper by Phillip Swagel is an extremely useful one. The author deserves credit for providing an explanation of what the Treasury was up to from the start of the credit crisis to the end of 2008 and why. As a result of this paper, generations of future economists will have a better understanding of the thinking behind various actions by the Treasury. No doubt this is also a very brave paper, because it would be surprising if future generations thought that 2008 was a time during which the Treasury addressed the financial market crisis with sufficient wisdom, skill, and foresight.

In this discussion I will not question a key theme of the Swagel paper, namely, that many actions that the Treasury might have wanted to undertake were simply not feasible politically, because Congress would not have approved them. I have no expertise on this issue. I am also willing to give Swagel and the Treasury much of the benefit of the doubt when it comes to actions taken in the midst of the market panic after Lehman Brothers' bankruptcy. Had I been in the position of Treasury officials at that time, I would have tried to do my best in very difficult circumstances to help the financial markets. But it would be presumptuous to argue that I would have done better than they did. I do not question that these officials were trying to do their best at that time.

Where these officials should not receive the benefit of the doubt is for what happened before the fall of Lehman. One could argue that the difficulties at mortgage banks early in 2007, as well as the sharp decline of various ABX indices at that time, should have been a wake-up call for regulators and the Treasury that there were problems in the housing market. The next wake-up call was one that could not possibly have escaped them. It was what John Taylor and John Williams (2008) call the "black swan" in the money markets in early August 2007. From then on it was clear that the financial markets and financial institutions were in unknown territory. In short order this black swan was followed by massive downgrades of collateralized debt obligations and securitization tranches, by a dramatic reduction in asset-backed commercial paper outstanding, and by a freeze in the markets for asset-backed securities. In the language of Frank Knight, investors seemed to go from the world of risk, where probabilities can be assigned to foreseeable outcomes, to the world of uncertainty, where they thought they had little clue about what the possible outcomes were and how to assign probabilities to them. From then until the fall of Lehman, there was ample time for regulators and the Treasury to have taken action.

The road to Lehman's bankruptcy was marked with still more wake-up calls. The fall of Bear Stearns in the spring of 2008 made it transparently clear that runs on investment banks could take place, because these banks were funded with large amounts of overnight repos. After Bear Stearns' failure, one had to know that investment banks were fragile and that what to do if a run took place was a key question that had to be addressed. Yet even today a resolution mechanism for such situations is lacking. Although Swagel focuses on poor underwriting and fraud in the subprime market as a serious issue, by the time of Bear Stearns' failure there was not much more to learn on that issue, if there ever was. The Treasury had been receiving reports on mortgage fraud all along (the so-called SAR reports received by Treasury have a mortgage fraud component) and had seen that it was increasing before the move in the ABX indices in February 2007 (Pendley, Costello, and Kelsch 2007). The fundamental fact about subprime mortgages was always that they were much less risky as long as home prices were rising.

An observer transported from the summer of 2007 to today would find it hard to believe that the crisis could have caused as much damage as it did. Many have called it a subprime crisis. At the end of the second quarter of that year, subprime securitized debt amounted to $1.3 trillion.[1] At least another $300 billion of subprime loans was held on banks' books (International Monetary Fund 2008, p. 51). An extreme scenario at that time would have been that half of all subprime mortgages would go into default, generating losses of 50 percent: losses expected by Moody's were well below this level in 2007 (Moody's Investor Service 2008a). In such a scenario, one would have expected a loss of $400 billion on subprime

1. Steve Schifferes, "Carnage on Wall Street as Loans Go Bad," BBC News, November 13, 2007.

mortgages due to default—less than half of what was lost during the stock market crash of 1987, which did not lead to a massive recession. Moreover, this loss in the subprime market would not have happened all at once, but rather would have been spread over time.

Why then did the problems in the subprime market lead to such serious difficulties for the financial system? The consensus explanation is that banks and broker-dealers had large positions in securities backed by these mortgages. Only a fraction, perhaps one-third, of the securitized subprime mortgages were held by banks. Had these mortgages been held as individual loans on banks' books, the losses from their default would have been recognized slowly over time, as borrowers stopped paying interest and principal. Banks would have been adversely affected earlier through required increases in loan provisions. Much of this impact could have been absorbed by the banks out of their current income. Instead, however, banks held interests in these mortgages through securities that had to be marked to market. Marking to market meant that the increase in the probability of default of these subprime mortgages affected banks' regulatory capital immediately. This impact was made worse by the increase in liquidity premiums charged by investors, which would not have affected mortgages kept on the banks' books as individual loans rather than as securities. By reducing the value of the securities through marking to market, the increase in liquidity premiums adversely affected banks' regulatory capital. Marking to market therefore dramatically accelerated the impact of the worsening prospects of subprime mortgages. As the Bank of England (2008, pp. 18–20) has pointed out, the drop in the dollar value of triple-A tranches from subprime securitizations was extremely large. However, most of that drop appears to have been caused by an increase in liquidity premiums. In fact, to this day a default on a tranche rated triple-A at issuance of a subprime securitization has yet to occur.[2]

Banks were suffering mark-to-market losses in plain sight in the fall of 2007. It was also clear then that banks would have to take back on their books securities held by off-balance-sheet vehicles, lowering their regulatory capital ratio even more. By then any market participant could tell that the market for many securities with subprime collateral was not functioning properly and that, as a result, banks would have to suffer costs from marking to market that had not been anticipated when the accounting rules were put in place.

2. Moody's Investors Service (2008b) shows no impairments for triple-A tranches of subprime securitizations in 2007. Collateralized debt obligations with an initial triple-A rating backed by subprime asset-backed securities have, however, defaulted.

In the fall of 2008, counterparty risks were a major factor in the freezing up of financial markets. It was difficult to know which financial institutions were solvent and which were not. Whereas before Lehman's failure the markets thought that default by a major counterparty was highly unlikely, they could no longer believe that in the immediate aftermath of that debacle. The freeze of money markets that occurred at the same time heightened concerns about fire sales of assets even further. Yet counterparty risk was already a concern much earlier. In fact, regulators were well aware of it. A report by senior supervisors of the most financially developed countries, published in April 2008, reported discussions with banks in which they raised concerns about counterparty risk to guarantors. The report then added, "Subsequent to our meetings, these concerns have become more widespread and pronounced across the industry, with many firms' exposures continuing to grow through year-end 2007" (Senior Supervisors Group 2008, p. 19) Thus, the counterparty risk problem did not come out of nowhere in September 2008. There was ample warning of it.

For the markets and for most observers, August 2007 was an unexpected lightning strike. Even those who at times get credit for having forecast the crisis did not predict the events of that month. The dramatic move in LIBOR that occurred then had never before been seen, nor had many of the other events that transpired. To be sure, many of the regulators of financial institutions had gone on a long vacation. The Treasury appeared focused on reducing regulation. A commission of academics, aptly named for the secretary of the Treasury and with his apparent blessing, was pushing for deregulation in the financial industry. Even after the start of the crisis, the focus of the Treasury was still on deregulation. But in August 2007 the regulatory vacation should have been over. The focus should have been on making sure that worst-case scenarios could be handled effectively and that contingency plans were in place. It is quite clear that there was much concern about moral hazard in 2008. Yet not much can be done about moral hazard in the midst of a crisis. If the objective of letting Lehman go under was to reduce moral hazard in the future, by showing that the Treasury was willing to let large financial institutions go bankrupt, this was a complete failure. Instead, letting Lehman fail put moral hazard on steroids, and it is not clear how moral hazard will ever be restored to where it was before Lehman's demise. Controlling moral hazard is critical when the taxpayers are the insurers of banks. It cannot be done without regulation and robust enforcement. However, the regulators also have to be provided with the right incentives to do their job. They did not have these incentives when the Treasury was focused on deregulation. Instead, the regulatory regime was at times too intrusive and at other times nonexistent. Unfortunately, trying to install regulation "lite" may have had the unintended effect of creating a world in which much more intrusive regulation, which may hurt economic growth in the United States, is likely.

There has been much criticism of banks' risk management practices. However, the official sector has a clear risk management task: to avoid, plan for, and resolve systemic events. No bank has failed at risk management as badly as the official sector has. Banks are not responsible for systemic risk. They face complicated trade-offs between risk and return. The task for the Treasury and the rest of the official sector was to focus on events that could endanger the financial system and be ready for them. At this they failed.

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COMMENT BY

LUIGI ZINGALES The end of an administration is no time to have a financial crisis, and the end of the George W. Bush administration was an especially inopportune time. With its senior staff substantially reduced and the remaining political appointees potentially distracted by concerns about their next job, the most powerful Treasury in the world found itself in late 2007 and 2008 without the human capital needed to plan for and deal with the worst financial crisis in three generations. Worse still, by that time the administration had lost the trust of Congress over the alleged weapons of mass destruction in Iraq, and the unpopular president was all but missing from the scene. This paper by Phillip Swagel provides some 60 pages of detailed description of the events of this period, yet President Bush appears only once, thanking the Treasury's cafeteria staff as well as the policy team for their efforts.

In this context, Swagel should be thrice commended. First, he should be commended for serving his country with passion and dedication until the end of his appointment. Although I disagree with many of the choices made, I have complete faith that Swagel worked with only with the interest of the country at heart. Second, he should be commended for consenting to serve as the public voice and face of an unpopular administration. Last but not least, he should be commended for the candor with which he has written this account of his extraordinary time at the Treasury. I think historians will long use his chronicle as the best description of what was going on at those critical moments.

It is precisely this candor that makes my role as a discussant easy, perhaps unfairly so. Although I write without the full benefit of hindsight—the crisis has yet to run its course, making it too early to draw final lessons—I certainly benefit from more information and more time to process it than Swagel and the other key players had at the time. Most important, criticizing other people's choices is much easier than improving upon them.

With all these caveats, however, my role as discussant is to point out the contradictions and limitations in Swagel's account. Only by reviewing and criticizing the decisions made in this crisis can the economic policy community train itself and prepare for the next one. Just as the analysis of the policy mistakes at the onset of the Great Depression proved useful in informing the decisions made at the onset of the current crisis, so, too, one may hope, analysis of the mistakes made at the onset of this crisis will help tomorrow's policymakers cope with or even avoid the next one.

Let me first point out the elements of Swagel's narrative most likely to suffer from the naturally "self-serving" bias he honestly admits to. The first regards the role played by the lack of legal authority, which, according to Swagel, prevented the Treasury from taking all the actions it deemed appropriate to deal with the crisis. Obviously, the United States is a country of law, and an administration cannot intervene in financial markets without legal authority. But this limitation is not so clear cut as Swagel makes it out to be. In March 2008 the Federal Reserve had dubious legal authority to lend to Bear Stearns, yet it found a mechanism (lending to J.P. Morgan to purchase Bear Stearns) by which to do so. It had no legal authority to buy toxic assets from Bear Stearns, yet, as Swagel describes, it found a trick to make it happen. The Treasury had no authority to force the major banks to take TARP money, but by exercising moral suasion it was able to bring them on board. Indeed, so strong is the power of moral suasion wielded by U.S. bank regulators that bankers often joke that when the regulators tell them to jump, they can only ask, "How high?" When one considers these various capacities in their totality—the Fed's control over whom to lend to, the FDIC's authority to take over bank subsidiaries (but not bank holding companies) that pose a systemic risk, the Treasury's ability to exercise moral suasion—it is clear there was some power to intervene, had there been the political will. For example, the Fed could have mandated a very large bank recapitalization, with the Treasury offering to provide the capital in case the market was unwilling to do so.

Thus, the real problem was the lack of political will, and the real question is why it was lacking. Was it because the Treasury experts really thought that buying toxic assets was the right solution, or because the lobbying pressure to do so was overwhelming? Unfortunately, it is here that Swagel's account is uncharacteristically lacking in detail: the paper contains no mention of any lobbying pressure from the financial industry. Is it possible that an industry that in 2008 spent $422 million in lobbying expenses played no role in shaping a policy so crucial for its survival? Why is the paper silent about these pressures?

The second potentially self-serving bias in Swagel's account is the emphasis on the limits imposed by Congress, which the paper amply blames as the source of all the administration's woes. Much of the paper suggests or implies that if only Treasury officials could have made Congress do what they wanted, the world today would be a better place. To be sure, Congress has imposed and still imposes limits on what an administration can do. But this is not necessarily a bad thing; in fact, this country was founded on the premise that there should be no taxation without representation and that each branch of government should exercise a check over the others. Decisions that impose a fiscal burden on U.S. taxpayers are and should be subject to the approval of their elected representatives. Of course, Congress does not always perform this job perfectly, and often individual representatives in powerful positions pursue their own agendas rather than the interest of the American people. But that does not justify the implicit call, which percolates through Swagel's account, for freeing the administration from congressional oversight. In fact, more useful than a blunt attack on Congress as a body would have been a detailed account of the self-serving constraints that individual members may have put on the path to a superior solution. Yet the only constraints that Swagel outlines in some detail appear to have been imposed not by self-serving minority interests, but by the lack of political (and popular) consensus on the proposed policies—which in a democracy *should* be a constraint.

Beyond that, Congress' unwillingness to appear to be rewarding people who overextended themselves financially to buy a house was not only a legitimate democratic constraint, but also good economic policy. And with the right amount of ingenuity, the negative home equity problem could have been (and still could be) resolved without violating this constraint (see, for example, Zingales 2008a and Posner and Zingales 2009). Similarly, when Congress balked at the prospect of handing out billions of dollars to the banks through the TARP, that was not a manifestation of congressional myopia, but rather an indictment of a Treasury secretary more used to strong-arming corporate boards than to eliciting popular consensus. The September 29, 2008, House vote against the TARP, far from being the short-sighted response of a hopelessly politicized Congress, was in fact a high point of American democracy. Undaunted by the dramatic headlines and the catastrophic forecasts issued by Secretary Paulson and Fed Chairman Bernanke, Congress realized the dangers involved in issuing a $700 billion blank check—and voted no. In fact, if there are grounds for criticizing Congress's performance in this episode, it is for later reversing its vote under the enticement of a heavy dose of pork-barrel add-ons.

This view of Congress as an obstacle to the Treasury's enlightened leadership, rather than as an equal player exercising proper constitutional balance, is what leads Swagel to congratulate the Treasury and the Fed for engaging in various financial engineering maneuvers aimed at imposing a fiscal burden on taxpayers without Congress' approval. One example is the nonrecourse loans offered by the Fed to Bear Stearns. Another is the guarantees offered to Citigroup and Bank of America. It is sad to learn that Swagel regrets that the Paulson Treasury took too long to fully appreciate the power of these tricks, leaving to the Obama administration the rare privilege of actually implementing the most deceptive ones. Having written against the use of these interventions by Paulson's successor, Tim Geithner (Veronesi and Zingales 2009), I believe I can criticize their creation by the Paulson team without fear of being accused of bias. It is precisely these types of tricks that feed the mistrust that Congress and the American people have toward the administration. As Swagel aptly describes, congressional mistrust toward the Treasury had very negative consequences during the crisis. But Swagel's own account provides the justification for that mistrust.

We know from microeconomics that any choice can be represented as the optimal one, depending on how one characterizes the constraints that apply. Swagel's description of the Bush Treasury's political constraints seems calculated in exactly this manner, as a means of relieving the administration of any responsibility for making the wrong decision: if the chosen strategy was the only feasible one, it must also have been the optimal one. Ironically, Swagel persists in maintaining this fiction of an absence of alternatives even after the Treasury's policy changed course dramatically in a matter of weeks. Whence the change in policy? The constraints had changed!

This Manichean view of an enlightened elite fighting against the neutering constraints imposed by Congress prevents Swagel from discussing the other feasible options in greater detail. Since the approval of the TARP, academics have produced detailed analyses of the costs and benefits of several such alternatives: from asset purchases to debt guarantees, from equity infusions to long-term put options to a spinoff of toxic assets into a "bad bank" (Philippon and Schnabl 2009; Caballero and Kurlat 2009; Landier and Ueda 2009; Veronesi and Zingales 2008; Zingales 2009). Similar discussions should have taken place inside the Treasury and the Fed before any decision was made. Yet Swagel's account provides no evidence that the costs and benefits were seriously debated. As he correctly points out, the turning point was the Bear Stearns crisis. Up to that point the administration could cultivate the illusion that the crisis would remain contained; afterward there was no excuse. Indeed, as Swagel recounts, it was after Bear Stearns that the Treasury started thinking about what he calls the "break the glass" policy—what to do in the event of a systemwide collapse. From the Bear Stearns rescue to the Lehman collapse, six months went by. What was the Treasury able to produce in that time? By Swagel's own admission, only the three pages of draft legislation that Paulson presented to Congress on September 20 and that led to the TARP. There is no mention of any intellectual discussion, no mention of any internal disagreement, no mention of any assessment of costs and benefits. This deafening silence in Swagel's account does nothing to dispel the pervasive (and, one hopes, wrong) view that the TARP was just a welfare plan for needy bankers pushed by Wall Street upon their friends in the government.

Even if the TARP had been the right break-the-glass plan—which it was not, as I wrote at the time (Zingales 2008b) and as Paulson himself later admitted—the fact that the plan required two full months to become implementable (as Swagel clearly details) validates the accusation of incompetence raised against the Paulson Treasury. What would one say about a hurricane emergency plan that took two months after the calamity to start working? Why were the details of a plan that had been conceived by at least March not fully worked out by September? If lack of staff is the reason, then the Obama administration is right to make the creation of a more permanent research department at the Treasury a priority.

Swagel's account is extremely interesting not only for what it says, but also for what it does not say. There is no mention of any economic principles guiding the Paulson Treasury. All its actions seem to have been guided entirely by legal and political constraints, without any overarching aim. Even if one accepts the idea that these constraints were rigidly binding, a well-justified strategy would have been helpful not only in selling the plan to Congress and the country, but also in avoiding confusion in the markets. After all, the government's actions during the course of the crisis were all over the map—from bailing out creditors but not shareholders in Bear Stearns, Fannie Mae, and Freddie Mac, to wiping out both in Lehman Brothers and Washington Mutual, to bailing out both in AIG, Citigroup, and since. In the words of the legendary Yale endowment manager David Swensen, "they've [acted] with an *extraordinary* degree of inconsistency. You almost have to be trying to do things in an incoherent and inconsistent way to have ended up with the huge range of ways that they have come up with to address these problems."[1] Nor has this inconsistency escaped the notice of ordinary Americans. In a representative survey of more than 1,000 American households conducted in December 2008, 80 percent declared that they felt less confident about investing in financial markets as a result of the type of government intervention undertaken in the last three months of 2008 (Sapienza and Zingales 2009b). This outcome did not stem from an ideological bias against government involvement; on the contrary, a majority of respondents expressed the belief that the government must regulate financial markets. What they objected to was the specifics. It is hard to estimate the real damage created by this inconsistency. What is known is that it had major negative effects on the level of trust that Americans have in the stock market (Sapienza and Zingales 2009a), leading them to shun investing in equities (Guiso, Sapienza, and Zingales 2008).

In his conclusion, Swagel nicely summarizes the four key dimensions along which a rescue plan should be evaluated: shutting down the zombie banks, adequately recapitalizing the solvent ones, eliminating uncertainty about the surviving institutions, and maintaining consensus on all these actions. Swagel admits failure on the first and last counts—the Paulson Treasury was unable to be selective in the allocation of TARP money and unable to maintain political consensus—but he claims victory on the other two. A final judgment is certainly premature.

1. FOXBusiness, "Yale's Swensen: Pols Missing the Point," January 6, 2009 (www.foxbusiness.com/search-results/m/21735678/yale-s-swensen-pols-missing-the-point.htm).

In 1998, after its first bank recapitalization, the Japanese government declared victory only to discover later that it would have to go through four more recapitalizations (Hoshi and Kashyap 2008). But even at this early date, Swagel's claim of victory seems hollow. As the recent bank stress tests have shown, the capital injections under the CPP program were insufficient to make troubled institutions fully viable, but sufficient to allow insolvent ones to keep limping along. The very fact that additional interventions had to be undertaken to support Citigroup and Bank of America after the first CPP injection suggests that the second and third goals had not been reached. Although Swagel is right in pointing out that after the CPP program the tension in financial markets subsided, it is unclear whether most of the credit goes to the capital injection or to the FDIC debt guarantee. And even if the Treasury is given full credit for stopping the panic in October 2008, one cannot ignore the fact that the Treasury shares much of the blame for creating that panic to begin with.

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GENERAL DISCUSSION Several panelists praised Swagel for sharing his insider perspective and for his frank description and assessment of the events he had witnessed. Alan Blinder summarized the paper's main point as follows: critics, particularly academics, pay too little attention to the legal and political constraints faced by the Treasury. And there are times when Treasury officials would like to take certain actions but refrain from seeking the authority because they are convinced Congress will not grant it. Blinder framed the rest of his comment by citing the motto of Montagu Norman, former head of the Bank of England: "Never explain, never apologize." Although the Paulson Treasury never enunciated it, in Blinder's view it operated under this motto. That said, Blinder did not believe the Paulson Treasury should be excused for its actions or its inactions. There are two ways to get around a legal constraint: either go to Congress to have the constraint relaxed, as the Paulson Treasury attempted with Fannie Mae and Freddie Mac, or get clever and find ways to get around the constraint within the law, as was done with the nationalization of AIG. Blinder disputed Swagel's point that, in the law-based society of the United States, banks cannot be forced to accept capital. He noted that Paulson did force some banks to take capital against their will, under the pretext of preventing stigmatization of other banks, and those banks made it very clear to the press that they did not want the money. Blinder also pointed out that although the TARP legislation mentioned foreclosure avoidance 12 to 15 times, no TARP dollars were used for that purpose during the Bush administration.

Daron Acemoglu noted that thinking about constraints is important, but that it is also important to consider the process, in particular its gradual nature. He described the Bush administration's approach as taking whatever action sufficed to keep an institution alive and then waiting to see what happened next. This strategy is correct, he argued, in a single-player decision problem, but when dealing with markets, gradual action may be counterproductive because there is a specter of something bad, like bankruptcy, nationalization, or other types of asset sales, happening at the end. This uncertainty breeds inaction and might make the problem much worse. Instead, Acemoglu suggested a different way of thinking about these situations, one in which making mistakes is acceptable, and making a decision and sticking to it is better than letting events unfold gradually.

Robert Hall brought to the Panel's attention a factor that had been underdiscussed but was, in his view, responsible for some of the economic distress in the commercial paper market following the Lehman Brothers bankruptcy, namely, the failure of money market mutual funds to behave like true mutual funds. One problem is that the "penny rounding rule" of the Securities and Exchange Commission allows money market funds to pay a withdrawal as if the fund's net asset value per share were $1 as long as the actual net asset value is between $0.995 to $1.005. This rule by itself provides a strong incentive for investors to withdraw when net asset value drops below $1. In addition, it appears that some funds did not write down their net asset value by enough when Lehman went bankrupt, further increasing the incentive for a run. Hall claimed that these two factors effectively turned money market funds into depository institutions and made them susceptible to runs. The Lehman bankruptcy might have gone more smoothly, he asserted, had the Reserve Fund, a large money market fund, immediately lowered its net asset value to a realistic level, so that early withdrawals did not have an advantage over later withdrawals. The run on money market funds caused the commercial paper market to fall apart, because these funds were among the main buyers. Hall argued that the central problem was that money market mutual funds wanted to be banks and not mutual funds, and that the SEC had failed to insist that they behave like mutual funds.

Justin Wolfers complimented Swagel on a compelling paper, from which he and others had learned a great deal about the political and legal constraints on policymakers. He was distressed that economists as a group know so little about how policy is really made, and he faulted the White House and the Treasury for not better communicating those constraints, as well as the economics profession for not taking those constraints seriously. He took issue with the veneration of political naïveté expressed in Luigi Zingales's comment, arguing instead that to take public positions on important policy issues without knowledge of the political process is a big mistake.

Zingales countered that economists should say what they think are the proper actions to take, regardless of the political constraints. Constraints are endogenous, and economists can help bring pressure to bear to modify those constraints. Paulson himself, for example, changed his ideas on capital injection as a result of pressure from the economics profession. Zingales did concede that although economists need not internalize the political constraints on policymakers, they should not criticize policymakers when constraints prevent them from taking recommended actions.

Caroline Hoxby questioned the asymmetry in the Treasury's use of TARP funds. People were concerned initially about the exact value of the assets to be bought and argued over whether it was, say, 76 or 81 cents on the dollar. In contrast, no such calculations were made for the multitude of other ways the stimulus money was spent. She wondered why the Treasury did not say up front that it might inadvertently buy assets at the wrong price, thus ending up throwing money away, but that even if they bought at 76 cents something that later proved to be worth 38 cents, the amount of money thrown away was at least eventually known. She observed that today money is being thrown away in many directions, whereas the earlier troubled assets likely would have recovered their value. It concerned her that the Treasury was too worried about getting the prices right, which ended up making matters worse.

Frederic Mishkin expressed concern about the Treasury's capital injections into banks, particularly the absence of conditions placed on taking the money in order to get all the banks to take it and avoid stigma. He noted that in MBA ethics courses, students are taught to maximize shareholder value. Under this principle, capital given to a business with a lot of debt should be used to pay the shareholders and other stakeholders, and potentially to give bonuses to management. He agreed that "getting clever," as Blinder put it, is important in tough times, and he acknowledged that the Federal Reserve had reasonably acted at the limits of its legal authority. Mishkin raised the issue of the importance of the AIG bankruptcy in comparison to Lehman Brothers. He felt that Lehman's downturn had been expected and therefore did not shake up the markets as badly as the surprising collapse of AIG, which revealed the rot in the entire financial system, causing a systemwide blowup.

David Romer asked why, if the Treasury had been working on the break-the-glass plan since March 2008, the bill that emerged in September 2008 was so minimal. He also wondered whether Swagel agreed with the claims of Paul Krugman and others that regulators interact so much with the financial markets that it causes them to give greater weight to the interests of Wall Street than to the general public welfare.

John Campbell noted that during the boom years credit ratings had been extended to new types of instruments carrying systemic risk, and that this had allowed investors to buy assets within a credit rating constraint yet still load up on systemic risk. The credit rating agencies had moved outside their sphere of competence, and the information in their ratings had become corrupted. He wondered at what point the Treasury had become aware of this problem and whether anything could have been done early on to mitigate its effects.

Benjamin Friedman expressed reservations about the use of the central bank to conduct what amounts to a shadow fiscal policy, which it does when it assumes credit risk. He noted that there is a reason why fiscal actions should go through Congress, namely, that such actions use taxpayer money, and he expressed concern that the end result, should the Federal Reserve take losses on the amounts it has advanced in private credit during this episode, would be to compromise central bank independence. He also underlined a distinction, which he felt had been overlooked, between two types of losses. The first involves a genuine loss to the economy, as in the case of a decline in the price of a home. Someone bears the loss, whether it be the homeowner, the lender, an investor who bought the securitized loan, or the taxpayer if the Treasury steps in to bail out the investor. The second involves a zero-sum loss, in which one party gains exactly what the other loses. Although the distinction might not matter to an individual institution that loses money, for the system as a whole, which is the ultimate concern of public policy, the two types of losses are very different.

Charles Schultze interpreted René Stulz's comment to say that underwriting standards were not an important factor in causing the financial crisis. But, he pointed out, between mid-September 2008 and mid-March 2009, the ABX price index for the second-half 2005 vintage of PENAAA subprime mortgage-backed securities fell from 96 to 83, whereas for the first-half 2007 vintage, the index declined from 57 to 26. Schultze argued that the large erosion of underwriting standards, combined with market uncertainty about how it had affected the quality of the portfolios of individual financial institutions, accounted for this pattern. He also thought worth mentioning, even though of little relevance to the paper, the role that annual bonuses had played in the decline of underwriting standards. In response, Stulz explained that he did not mean to say that underwriting was unimportant, but that there had been no visible change in standards consistent with the facts mentioned in the paper. He noted that fraud was very important at the end of the timeframe discussed, but he did not view it as a driving factor.