

Policy Analysis

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Financial Crisis and Public Policy

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Executive Summary

This Policy Analysis explains the antecedents of the current global financial crisis and critically examines the reasoning behind the U.S. Treasury and Federal Reserve's actions to prop up the financial sector. It argues that recovery from the financial crisis is likely to be slow with or without the government's bailout actions.

An oil price spike and a wealth shock in housing initiated the financial crisis. Declines in stock values are intensifying that shock, threatening to deepen the current recession as U.S. consumers and investors cut their expenditures. An offsetting wealth injection from additional risk-bearing investors could initiate a quicker recovery. Thus, supporters of government intervention justify the bailout's debt-financed fund injections—in essence, they want to compel future taxpayers to join the group of today's risk-bearing investors.

However, the bailout is poorly designed and

its implementation appears panicky—marked by a knee-jerk trial-and-error process that may have heightened market uncertainty. Worse, current interventions in market processes and institutions could become permanent, to the probable detriment of the nation's long-term economic prospects. With or without the bailout, the ongoing recession is likely to be deep and long.

From a philosophical perspective, any bailout action provides a host of bad incentives. Moreover, we should be mindful that future generations already face massive debt burdens from entitlement programs. Increasing those burdens by expanding the bailout program or enacting a massive fiscal stimulus will hasten the long-anticipated crisis in entitlement programs. Thus, the ongoing economic crisis could usher in permanently higher taxes, greater government involvement in the private sector, and a prolonged period of slower economic growth.

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Introduction

In October 2008, Congress approved a proposal by Bush administration Treasury secretary Henry Paulson and Federal Reserve chairman Ben Bernanke to spend up to \$700 billion of government funds to shore up the U.S. financial system. The plan initially envisioned using those funds to buy financial assets—mostly mortgage-backed securities held by banks and other financial institutions—that have lost value in the wake of the housing bubble. Uncertainties about how far home prices will continue to decline and about the likelihood of future mortgage defaults have made those securities “toxic.” Financial market participants’ unwillingness to lend to or trade with institutions holding large amounts of such securities—especially those backed by subprime mortgages with declining ratings—has disrupted credit flows among bank and nonbank financial institutions. The convoluted structure of financial contracts for securitizing and insuring mortgage pools makes their valuation difficult and has contributed to the decline in market transactions in these securities.

Paulson and Bernanke initially believed that government purchase of the securities at prices determined through auctions would refuel finance by replacing toxic assets with government cash. However, in the weeks following the congressional vote, the bailout evolved into a plan to spend at least \$250 billion of the allocated money on purchasing preferred stock in banks and other financial companies. That would not eliminate the toxic assets from those firms’ books, but it would infuse the firms with additional capital in the hope of reigniting credit transactions and restoring the financial sector to normalcy.

Regardless of the details, government efforts to bail out the financial sector have met with sharp criticism. There is a strong sentiment among the public that their tax dollars should not be used to shore up the health of financial firms that made poor economic decisions. It is difficult to disagree with that sentiment.

This Policy Analysis, however, examines the bailout from an economic perspective. Skeptics of the bailout believe that struggling financial firms should be left to fall into bankruptcy. They believe that the sooner those firms collapse and their assets are purchased by healthier competitors, the sooner the financial sector can restructure itself to restore normal credit flows that are vital to maintaining the broader economy’s health over the long term. From this perspective, the congressional bailout plan will only delay proper asset revaluation and resumption of normal credit flows. Thus, it will prolong the recession triggered by the bursting of the housing bubble as government intervention slows needed structural adjustments in the financial sector.¹ Unless market forces are allowed to eliminate insolvent financial companies through bankruptcy, restructuring, and resale, there can be no lasting economic recovery, say bailout skeptics.

Most participants in the bailout policy debate envision an eventual return to normalcy—with bank balance sheets restored and credit flows operating at customary levels. The question is about which policies are appropriate to the goal of making the intervening recession shorter and shallower.

Recessions: Oil Shocks versus Financial Shocks

Postwar U.S. recessions have usually been the result of oil shocks combined with restrictive monetary policies adopted by the Federal Reserve to prevent higher energy prices from inducing a broader inflationary spiral. Oil price spikes require firms and households to implement structural adjustments: alter production technologies to economize on energy use or shift to cheaper energy sources. Firms that cannot adapt technologies to conserve energy inputs must scale back operations or fold. Eventually, new firms emerge in less energy-intensive sectors, especially services. Most economists agree that in such an environment, allowing market price signals to facilitate needed structural change, rather than

Figure 1
World Spot Crude Oil Prices



Source: U.S. Energy Information Agency.

government-determined resource allocation, is the best approach.

Although the price of oil has receded in recent months, the trend in oil prices has been positive so far during this decade (Figure 1). Oil prices have been creeping upward since December 2002 but did not interrupt the post-2003 surge in housing prices (Figure 2). The oil price increase was continual, however, through 2006—rising from \$30 per barrel during late 2003 to almost \$70 per barrel by mid-2006. That sustained increase in oil prices is associated with a declining trend in U.S. non-oil consumer spending growth and probably caused housing price increases to slow during 2006.² After all, most new home construction in major metropolitan areas was occurring in far-flung suburbs, and energy cost increases meant households could no longer commit to lifestyles requiring high energy and commuting costs. The slowdown in home price appreciation was tipped into a downturn by the subsequent, increase in oil prices that lasted from early 2007 through mid-2008.

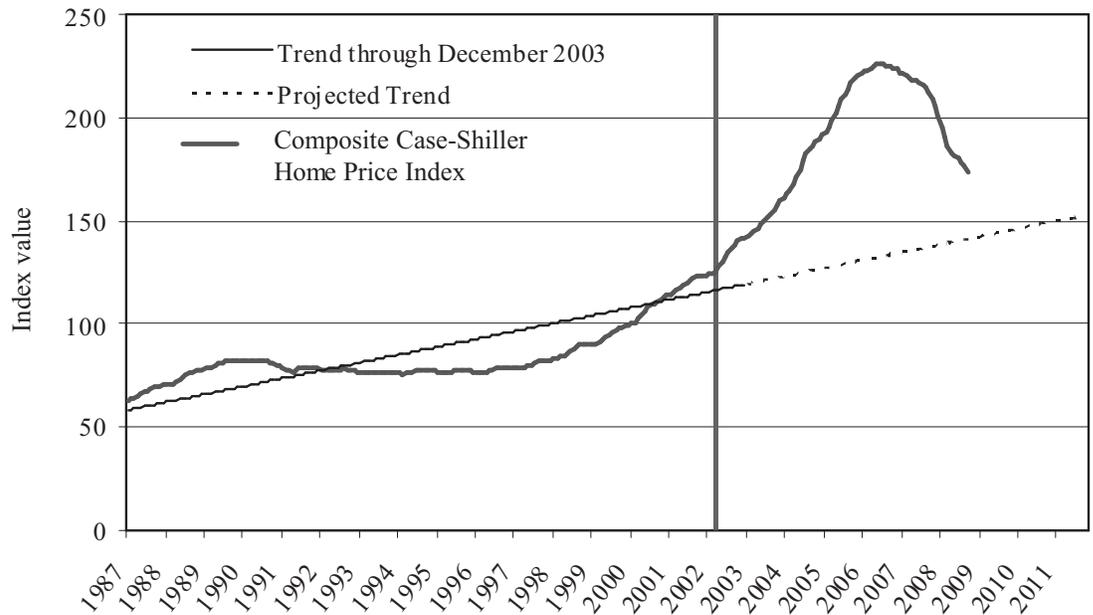
Now, although oil prices have pulled back

substantially from peak levels, the main force propelling economic decline is the continued devaluation of the nation's housing stock. That decline is sustained by the now-large inventory of unsold homes and gathering momentum in mortgage defaults and home foreclosures.³ Figure 2 shows the Case-Shiller index of home values—a composite index based on home price samples in 20 U.S. major metropolitan areas. It shows that home price changes had moderated for a few months during the spring of 2002.⁴ Had that moderation been maintained, home prices might have remained close to their long-term trend through 2003, as shown in Figure 2.

One reason for the rapid escalation in home prices through 2006, which was far faster than the long-term trend and happened despite rising oil prices, was the populist political agenda of promoting home ownership. The genesis of a reinvigorated push for increased homeownership can be dated to President Bill Clinton's support, through the Department of Housing and Urban Development, for expanded homeownership by first-time, low-income, and minority homebuyers. Policymakers weakened

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Figure 2
Composite Case-Shiller Home Price Index



Source: Federal Reserve Bank of St. Louis.

With increasing frequency during the early 2000s, lenders granted mortgage loans with little or no money down, zero closing costs, and/or sparse documentation of borrowers' ability to pay.

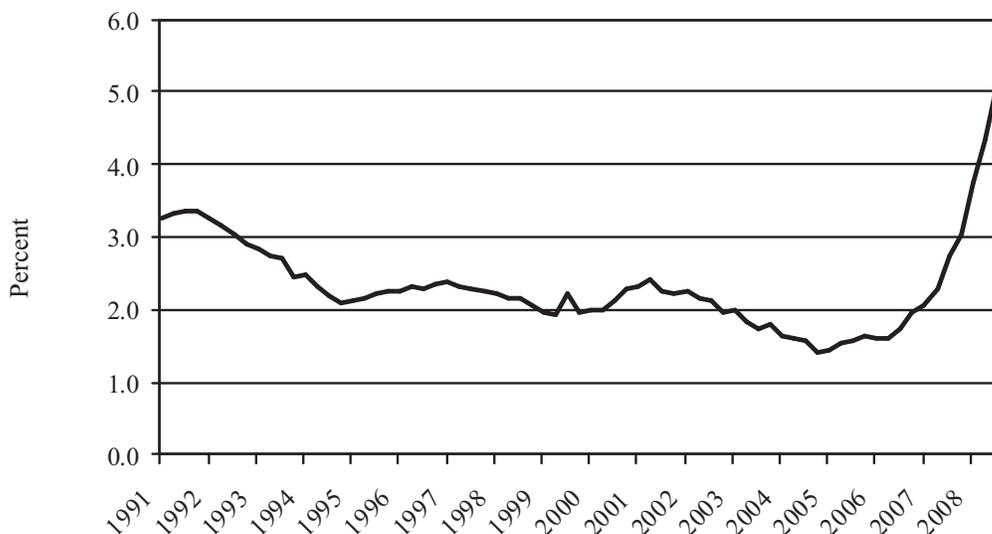
regulations governing mortgage loan eligibility—including income and asset adequacy, credit history, and personal interview requirements—to expand homeownership.⁵ The Bush administration, explicitly committed to promoting an “ownership society,” failed to reverse those policies. The result was a boom in the homeownership rate from 64 percent during the early 1990s to almost 68 percent by 2000. The White House and Congress encouraged the giant, government-sponsored mortgage firms Fannie Mae and Freddie Mac to expand into riskier subprime and “Alt-A” mortgage markets by purchasing mortgage-backed paper containing contracts originated under the now fragile borrower-review process.⁶ With increasing frequency during the early 2000s, lenders granted mortgage loans with little or no money down, zero closing costs, and/or sparse documentation of borrowers’ ability to pay.⁷

Fueled by the expanded availability of mortgages, home prices began to accelerate sharply in 2003, generating the bubble evident in Figure 2. The figure also shows the trend in home prices through December 2002, just before sustained home-price acceleration com-

menced. It shows that although the decline in housing prices since the spring of 2006 has been substantial, prices remain well above their pre-2003 trend level. As Figure 2 suggests, home prices can remain off their trend level for considerable periods of time. Thus, based on their past behavior, home price declines may continue even after home prices have returned to their long-term trend path, as shown in Figure 2.

Now, rates of mortgage delinquency, defaults, and foreclosures are increasing for all types of home-loan contracts (Figure 3).⁸ Unlike the earlier oil price shocks, the housing wealth shock has resulted in a near collapse of the financial sector. Investment banking, which quintessentially defined the “Wall Street financial firm,” has been disbanded. The assets of erstwhile investment banks have been transferred wholesale through Fed-guaranteed deals to other banks or reconstituted as commercial banks with access to the Fed’s emergency lending facilities. Only one investment bank—Lehman Brothers—was allowed to fail, and it was dismembered and sold to other financial firms. Moreover, threats of bank runs because

Figure 3
Delinquency Rates on Residential Mortgages with Commercial Banks
(seasonally adjusted)



Source: Board of Governors of the Federal Reserve System.

of deteriorated asset positions have forced the failure of a few large commercial banks since mid-2007.

Too Big to Fail?

Many other banks and nonbank financial companies have weakening asset positions and are running short on reserves. The net result is that credit flow volumes within the financial sector have been decimated and credit flows toward nonfinancial sectors—mainline businesses in transportation, communications, retail trade, and so on—are declining sharply.

Apart from directly weakening bank balance sheets, the housing wealth shock has reduced consumer spending. Both factors—a constriction of credit flows and slower consumer demand—are causing production slowdowns. In turn, layoffs are likely to trigger additional mortgage defaults, reduced home prices, and further weakening of bank balance sheets, making it difficult for credit flows to resume. The U.S. economy now appears ensnared in a

vicious downward economic spiral.

Thus, an important difference between the current episode and previous postwar recessions is that this time around, the financial sector has been massively disrupted. During earlier recessions, a well-functioning financial sector played a key role in facilitating the economic recovery: it channeled funds to more profitable enterprises and curtailed credit to economically inefficient ones. What are the implications of a disrupted financial sector for the ensuing recession? Should the logic applied in earlier crises to nonfinancial firms—of allowing insolvent ones to become bankrupt—be applied to financial firms in the current episode?

Until the adoption of the bailout plan, efforts by the Treasury and the Fed to buttress the financial system have been piecemeal, with government rescues being offered only to firms considered “too big to fail”—that is, firms whose failure would have dire implications for the financial system as a whole. This “systemic risk” threatens the extension of credit to nonfinancial firms and could deepen

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the current recession. Minimizing systemic risk is a key goal of all federal financial regulatory institutions—the Federal Reserve, the Securities and Exchange Commission, the Comptroller of the United States, and the Federal Deposit Insurance Corporation.

In the current episode, there is plenty of blame to go around. Bank regulators, the White House, and Congress all bear some responsibility: the housing wealth shock has negatively affected almost all financial firms holding depreciating mortgage-backed securities. But those securities were promoted most intensely by the mortgage giants Fannie Mae and Freddie Mac, both of which enjoyed access to government borrowing and maintained some of the highest leverage ratios in funding and securitizing mortgages, including subprime ones. The irony here is that, despite the governmental mandate to lower households' costs of homeownership and regardless of the systemic risk posed, Fannie and Freddie's actions were primarily motivated by maximizing their shareholders' profits.⁹

Declining home values and rising default rates mean that financial companies that possess large amounts of mortgage-backed securities are losing value. Weak and worsening assets on their balance sheets make lenders fearful of renewing loans. Compounding the uncertainty among creditors are opaque derivative structures of securities held by financial companies. Those portfolios are now difficult to evaluate in terms of their prospective returns.¹⁰ Creditors' unwillingness to renew lending is similar to a "bank run" on financial companies' liabilities—pushing them first into illiquidity, and eventually, to insolvency and bankruptcy.

With a considerably weaker financial sector, however, the possibility that financial bankruptcies could exacerbate and lengthen the vicious downward economic spiral strengthens the theoretical case for a government bailout. However, the case for government intervention requires more than simply positing the possibility of a vicious economic spiral. It must demonstrate the existence of a "market failure" in the financial sector and the

likelihood of a successful government bailout.

Financial institutions have failed at regular intervals since 2007—beginning with Countrywide Bank in July 2007 through the Treasury backstopping of Citigroup in November 2008. In the intervening period, Bear Stearns, IndyMac, Lehman, AIG, Fannie and Freddie, Merrill Lynch, Washington Mutual, Wachovia, Citigroup, and other financial firms have been propped up via public fund injections, taken over by better-capitalized private firms or federal agencies, or otherwise restructured or split up and resold. Goldman Sachs and JPMorgan Chase have been redefined as commercial banks. Most of the investment banks, along with Fannie and Freddie, have now been restructured, taken over by the federal government, or redesignated as commercial banks.

However, the failure of Lehman—which the Fed and Treasury chose not to protect—had catastrophic consequences. Policymakers allowed the firm to fail because they believed that market traders had plenty of time to note its shaky financial prospects and protect their assets. Despite such advance knowledge, Lehman's counterparty traders did not act—perhaps they expected a government bailout as in the case of Bear Stearns. Hence, when Lehman went under, counterparties' balance sheets were disrupted. More importantly, financial traders panicked. Lehman's failure signaled that the government might refuse assistance to other financial companies that encountered liquidity shortages or became insolvent. The latter fear triggered a global credit freeze—precisely the outcome that federal regulators are supposed to prevent.¹¹ Concerned Fed officials now believe that Lehman's trades and obligations should have been sustained, even at taxpayer costs, as were those of Bear Stearns.

Why did Lehman's failure compound the financial sector's problems into a panic? After Lehman's failure, the fear that debtors with poor assets may not be around to pay back borrowed funds—especially as the Fed and Treasury signaled that bailouts were not assured—worsened an already alarming financial situation into a panic. The word

“panic” sounds overdramatic but appears to be justified: key indicators of credit risk—for instance, the difference between interest rates on three-month European interbank loans and three-month U.S. government debt, better known as the “TED spread”—had already achieved historic highs and were at many times their normal levels during mid-2007. During mid-October 2008, however, their level shot up still further.¹² The Treasury bailout and the Fed’s injections of vast amounts of liquidity into the financial markets have reduced credit-risk spreads from their October 2008 highs, but they remain many times higher than their normal (pre-2007) levels. Lending and borrowing activity remains paralyzed within the financial sector and is constraining economic activity in non-financial businesses (Figure 4). As a result, the current economic recession is much deeper and has lasted much longer than the

two previous recessions in 1991 and 2001.

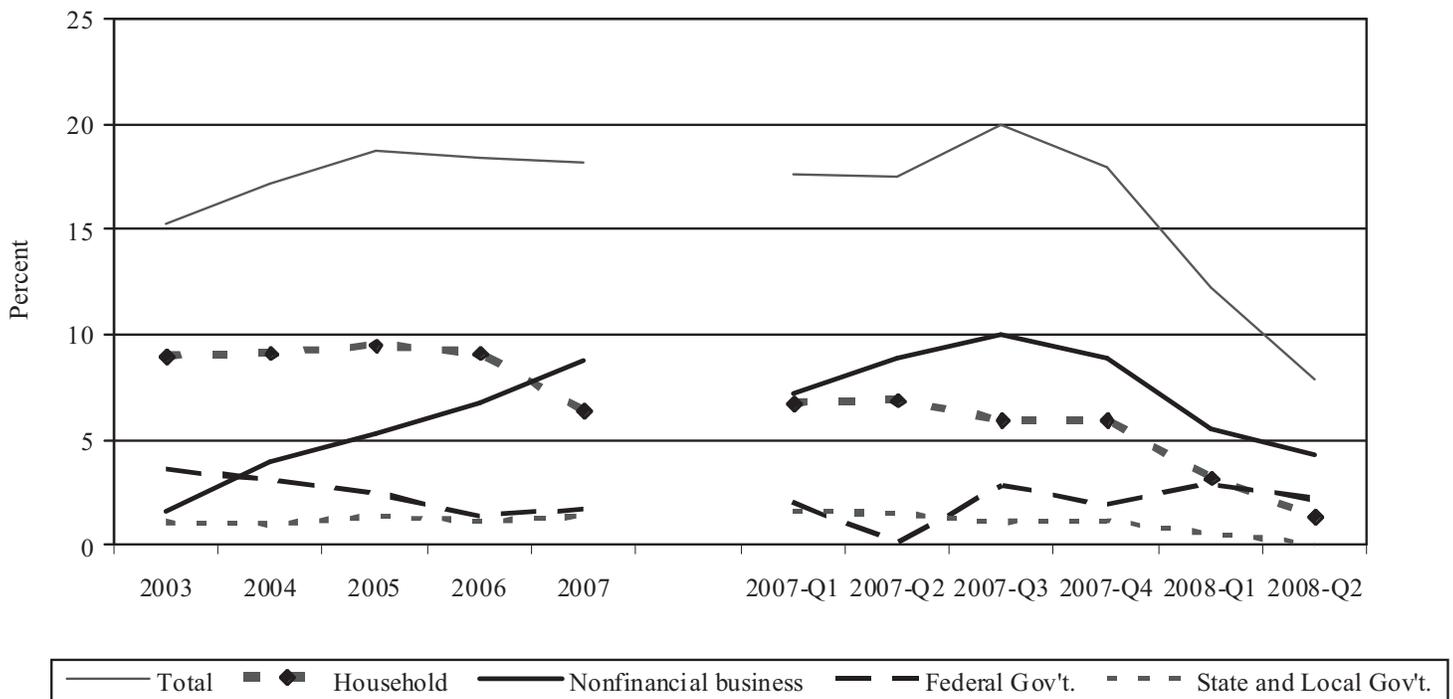
Remedies

The case for government intervention is based on the argument that, unlike earlier recessions, the current crisis involves a massive disruption of the financial sector that may not be cured by market forces alone. This and the following section examine the reasoning in favor of a government bailout of the financial sector. However, the balance of this Policy Analysis argues that such government intervention is unlikely to be implemented effectively and would only compound the United States’ grim long-term financial outlook. Indeed, as of this writing, many observers are bemoaning the unsatisfactory implementation of the Treasury bailout.

A negative wealth shock normally induces a

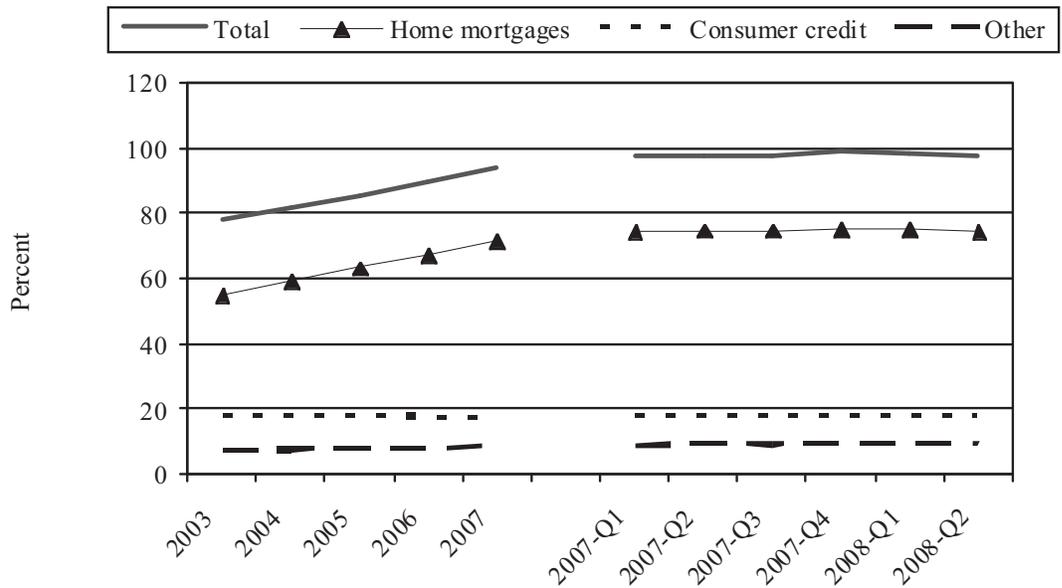
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Figure 4
Non-Financial Sector Borrowing as a Percent of GDP



Source: Board of Governors of the Federal Reserve System.

Figure 5
Household Debt as a Percent of GDP



Source: Federal Reserve Board of Governors.

Unfortunately, foreigners are unlikely to step in with sufficient capital to resolve the crisis.

decline in output and consumption. Maintaining them at the pre-shock levels requires that someone lend additional funds to compensate for the negative wealth shock. Those funds could be used to sustain current consumption and purchase new assets—say, more oil drilling equipment instead of houses—that can be used to restore the nation’s output and consumption growth. And the additional debt and capital infusions would be repaid from production and profits in the future.

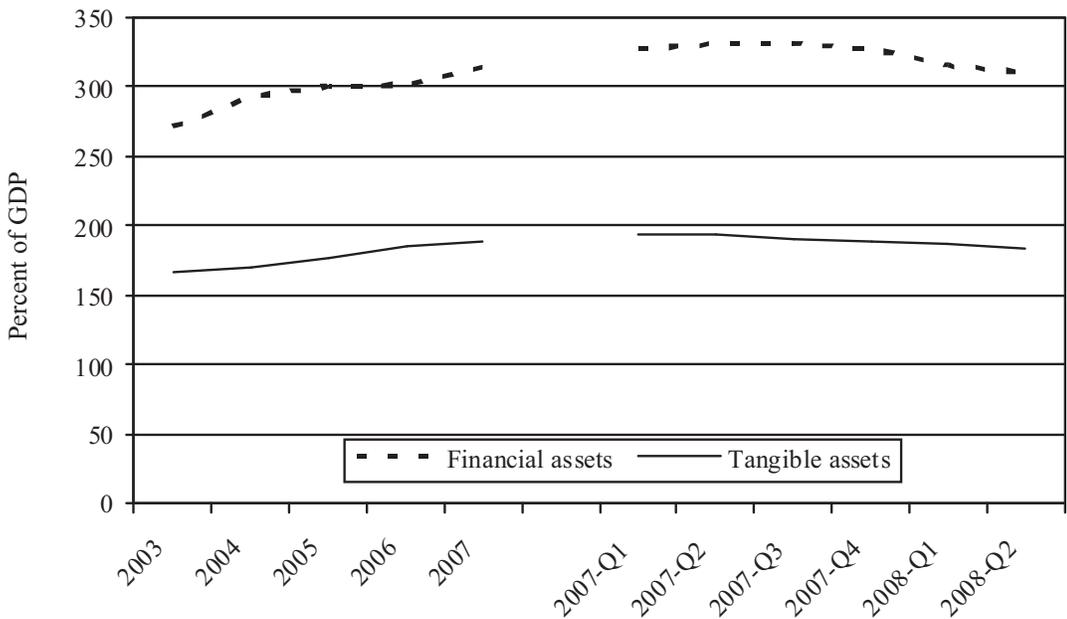
New funding sources require an expansion of the pool of risk-bearing creditors. But few of those creditors can be found domestically; U.S. households’ budgets are stretched to the limit, because of their hitherto high-consumption and low-saving lifestyles. Americans are overburdened with debt (Figure 5) and are now experiencing declining asset values (Figure 6). One potential source of additional capital is foreign savers. By extending more credit to us, they would bear additional financial risk as the U.S. economy undergoes its structural reorganization—say, shifting away from housing and toward energy exploration, from financial engineers toward regular ones, and so on.

Unfortunately, foreigners are unlikely to

step in with sufficient capital to resolve the crisis. Foreign savers have already lent substantial amounts to U.S. firms and households in the past and the global nature of the current downturn shows that they are not immune to a contraction in U.S. consumption. Their financial institutions are also exposed to the downturn in U.S. home prices and they, too, will need to conserve cash. And they are just as fearful of the toxic and impenetrable mortgage-related securities on U.S. financial firms’ balance sheets as any other potential creditors.

If foreign firms are unwilling to lend as much as is needed because of risk considerations, why don’t interest rates increase to compensate them for larger loan amounts and higher risks? The answer is that rate increases only work up to a point. Issues of risk, trust, and reputation are difficult for creditors to evaluate and, beyond a point, those attributes may be negatively associated with larger loan amounts. Recall that oil magnates and other foreign funds extended some additional capital to some U.S. financial firms a few months ago, but only under very generous returns and guarantees.¹³ They probably possess more loanable funds, but they won’t extend more credit to

Figure 6
Household Assets as a Percent of GDP



Source: Federal Reserve Board of Governors.

U.S. financial firms, even under still-more-lucrative terms.

In most markets—take oranges as an example—the exchange of goods for money is simultaneous and the characteristics of both are easily observable. In credit markets, however, transactions are nonsimultaneous. Delivery of funds from creditor to debtor, and repayment with interest, are separated in time. Lending thus requires prior creditor confidence in borrower creditworthiness. Such confidence arises only when the creditor has good knowledge about the borrower’s financial condition—the asset side of the balance sheet.

Today, however, with many financial companies carrying toxic assets on their balance sheets, potential lenders are unable to verify borrowers’ creditworthiness. Many potential lenders are also concerned about needing cash reserves themselves in the future and are seeking to conserve liquidity. After a point, as higher demand for loans and smaller supplies of cash reserves cause borrowers to increase their interest rate offers, total loan supply may decline, rather than increase, in response. That’s because willingness to pay higher inter-

est rates on a larger loan itself constitutes a negative signal of creditworthiness.

Both adverse selection and moral hazard potentially play a role in credit and capital markets, causing their failure during times of high market uncertainty. Adverse selection refers to the phenomenon where the riskiest borrowers—those with the smallest likelihood of servicing and repaying loans—would be the ones willing to offer higher interest rates. And moral hazard refers to (changes in) borrowers’ behavior that makes loan service and repayment less likely (and defaults more likely) after obtaining loans under onerous terms. Being concerned about these phenomena, creditors generally refuse to commit more than a maximum amount of funds no matter how high the loan interest rate is.¹⁴ Indeed, as interest rates increase, lenders may reduce the amounts that they are willing to lend. This aspect of credit transactions is different from the normal market for oranges, wherein supply increases without limit (in principle) in response to higher prices.

It should be noted that the problems of adverse selection and moral hazard caused by

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asymmetric information in credit markets also have private market solutions. Firms specializing in producing information on credit and borrower quality, security ratings and risk profiles, and industry performance measures emerge to perform the necessary evaluation and monitoring tasks that are too costly for individuals, and even institutional investors, to undertake. However, the current financial crisis is characterized by the evident failure of ratings agencies to provide reliable information on the quality of mortgage-backed securities. Restoring their reputations and functions will require evidence of better performance that can only be accumulated over the long term.

Under the current financial market environment, creditors are especially nervous about their counterparties' creditworthiness, and especially about how much their future asset positions will deteriorate because of declining house prices. Indeed, a credit freeze indicates extreme fear about borrowers' creditworthiness. Today, the maximum loan amounts, beyond which market price signals fail to induce additional credit supply, are very near zero. That reasoning probably explains why foreign savers and oil-rich sovereigns won't extend additional capital to support U.S. financial companies.

The Call for Intervention

As the U.S. financial crisis persists, policymakers feel compelled to act. They seek to counter the housing-wealth shock by extending the pool of risk-bearing creditors. With oil magnates and other wealthy foreigners unlikely to provide sufficient capital injections to private U.S. firms, policymakers are turning to another group of prospective creditors: future U.S. generations, who can be "forced" to lend through a debt-financed government bailout plan. Intervention proponents can argue that future generations, were they around, should and would be willing to sacrifice some of their (eventually larger) resources to help current generations (and themselves) to dig out of a potentially prolonged economic downturn.¹⁵

However, future generations cannot directly extend this credit because they, and their wealth, do not yet exist. This reflects a form of market incompleteness that prevents a solution to the current financial market failure.¹⁶ That failure provides theoretical justification for government to step in and effectively transfer resources from future generations to those alive today¹⁷—assuming that this transfer will be effective in preventing or reducing economic harm from the financial crisis.

Bailout supporters point to two reasons to believe that the bailout might help to resolve the financial crisis. First, they claim the current version of the bailout would broadly recapitalize banks and revive borrowing and lending activity. It is tempting to think that capital injections should be limited only to financial firms that made reasonable investments but suffered illiquidity because of a widening financial panic, not to those near insolvency because of high exposure to toxic mortgage-related securities. In general, this principle should be followed. However, judging which banks deserve help and which should be terminated may be very difficult and time-consuming, given the broad and deep penetration of housing-related asset failures. Separating the good from the bad would involve unwrapping many layers of complex derivative instruments and the imposition of arbitrary (nonmarket) asset valuations. It would create wasteful lobbying activity by financial firms, a strong incentive for corruption, and require intense public (congressional) scrutiny.

Second, direct capital injections by the U.S. government may induce private wealth holders and foreign savers to commit additional funds to U.S. financial institutions. That inflow of capital could prevent the credit crisis from developing into an economywide credit crunch. Such complementarities in alternative investment sources might occur simply because the commitment of future taxpayer funds could reduce foreign investors' perceptions of credit risks among U.S. financial firms and stimulate additional lending.

The foregoing discussion suggests that the government should tailor public policies to the

causes and symptoms of particular recessions. Thoughtful proponents of government intervention would argue that recessions arising from shocks to input prices—such as oil prices—that are limited to nonfinancial sectors require restructuring by private firms through technological change. That’s best achieved through an unfettered operation of market forces. In contrast, they argue, recessions involving a large wealth shock—in this case, declining home values—that results in a broad financial sector collapse require a different approach. Given the crucial role of the financial sector in greasing the economy’s wheels, and given the significant potential for market failure (a credit freeze because of asymmetric information and intensified adverse selection and moral hazard), the recapitalization of financial intermediary firms requires borrowing from abroad and from future generations. New government borrowing could induce more investment by foreigners, promoting a quicker restoration of bank capital and an eventual return to normal levels of financial intermediation.

In short, bailout proponents have met a necessary condition for government intervention: there is a financial sector failure that could impede the market’s self-correcting mechanisms, resulting in considerable harm to the nation’s—and the world’s—economy. Moreover, there are some theoretical grounds to believe the bailout plan could address the credit crisis and reduce the severity of the looming recession. However, there are several reasons to believe that the bailout will be ineffective—most importantly because it is being implemented badly, despite the best efforts of government officials. Moreover, the Treasury bailout plan—and any giant new fiscal stimulus plan cobbled together by the Obama administration and Congress—will worsen the nation’s already bleak long-term fiscal outlook.

The Psychology of Contagion

The financial crisis is causing distress among many who are not directly involved in the financial sector and panic among those who are. Many people are seeing the value of their retirement savings dissolve as the stock

market drops like a stone. Since its peak in fall 2007, the S&P 500 stock index had lost nearly 45 percent of its value by the end of 2008. Underlying the losses is a near-total collapse of financial intermediation—the availability of credit, especially short-term and unsecured—on a global scale. Not surprisingly, the mainline U.S. economy, other than construction (which was already in decline)—transportation, communications, agriculture, and so on—is being forced to operate under tighter credit constraints and many companies are beginning to downsize. As a result, the civilian unemployment rate has spiked by more than 2 percentage points since January 2008.

The Federal Reserve has provided hundreds of billions of dollars in liquid cash reserves to commercial and noncommercial financial institutions. It is also offering to purchase nonfinancial firms’ commercial paper to support credit transactions in the economy, and now pledges “unlimited” liquidity provision and guarantees interbank lending. The Federal Deposit Insurance Corporation has increased limits on deposit insurance. And Congress passed a \$700 billion bailout bill to fund purchases of toxic assets by the Treasury in the hope of easing the credit crisis. The Treasury has dedicated up to \$250 billion of that \$700 billion to purchase preferred shares and warrants in financial companies. All of these unprecedented actions have been taken in the hope of preventing financial sector illiquidity from becoming a widespread credit crunch and triggering a global economic recession.

The most poorly understood aspect of the financial sector crisis is “contagion”—the spread of balance sheet weakness and defaults across a swath of financial firms just because a small segment of the mortgage market (subprime loans) soured and one large financial firm (Lehman) was allowed to fail. The keys to understanding contagion are the roles played in the housing bubble by mortgage underwriters, securitizers, and insurers; investment banks; ratings agencies; and foreign and domestic investors—banks, pension and mutual funds, and individuals. The complex and convoluted interrelationships among

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them have brewed a financial “perfect storm.” What is the nature of these interrelationships, and why would the collapse of one sector—housing—trigger a nationwide financial collapse and threaten a global recession?

Financial innovations during the last three-and-a-half decades utilized all of the professions listed above. State-licensed mortgage finance companies and commercial banks originated mortgage contracts for a fee. Loan originators pooled and securitized mortgages. Mortgage service payments accruing to the pool were divided into different categories—tranches—with varying default risks. The payment streams were connected to bond issues of different ratings for sale to investors.

National ratings agencies gave high grades to the bonds supported by the safest cash flows.¹⁸ About 80 percent of the securities issued received the highest rating, on par with those of Treasury securities, the world’s safest financial paper. Indeed, mortgage-originating banks held the safest mortgage-backed securities in their own portfolios, the remaining being “adversely selected” for sale to other investors. Investors seeking higher returns purchased the securities backed by riskier tranches. Such securitization of mortgages was intended to distribute the risk of mortgage underperformance or nonperformance across a broad range of investors—according to their preferences and tolerance for bearing financial risks.

Mortgage securitization served to both pool and spread risks. The pooling aspect combined mortgages from different locations to achieve a low correlation between their default rates. Risk spreading was achieved by issuing and selling securities backed by such mortgage pools to many investors, each of whom bore a small part of the risk of any given pool.¹⁹

A second element in financial firms’ operations was the placement of highly leveraged bets. As is commonly known, financial firms, including banks, borrow for short durations and lend over longer ones. The gap in maturity lengths on the asset and liability side of the balance sheet is a means of earning income—

long-term loans, although less liquid, earn higher returns than the interest rates paid on short-term deposits. Whereas banks are subject to limits on how large their loan portfolios (i.e., assets) can be relative to bank capital, investment banks and other nonbank financial institutions face no such limits.²⁰ They borrowed up to 30 times as much as their own capital to invest in long-term illiquid assets such as mortgage-backed securities. But high-leverage ratios come with the risk of having too little capital to fall back on when creditors become skittish and demand evidence that the firm can meet its obligations. The decline in stock market values of investment banks triggered just such concerns among creditors. Failures loomed as assets could not be sold at “fair” values commensurate with their long-term return prospects. The resulting illiquidity was compounded, because, at a time of low confidence among market participants, most were also interested in selling assets themselves, thus exacerbating market price declines.²¹

As many investors are now painfully aware, the risk-pooling and risk-spreading functions of mortgage-backed securities involved a third effect: concealment from investors of the sources and locations of those risks in the financial firms’ balance sheets. The fact that mortgages with high default risks are hidden deep within complicated derivative instruments would not matter if home prices were still increasing. On balance, such financial securities would still garner handsome profits—loan servicers acting on behalf of creditors would simply foreclose on the homes and pocket the capital gain. But in a housing price downdraft, investing in such securities requires prior confidence that they are not backed by highly risky mortgages.

With the broad-based decline in housing prices, creditors’ confidence in the solvency of highly leveraged financial firms declined and caused the creditors to curtail lending to firms holding mortgage-backed securities in their portfolios. The continued decline in home prices has affected mortgage-backed securities well beyond the subprime housing loan sector,

spreading much more broadly among banks, pension funds, and other investors.

Why are risks across balance sheets of so many firms in different areas within the financial sector so highly correlated? Is there not a functional division of labor among financial firms whereby some specialize in funding mortgage-backed assets, others in commercial ventures of different kinds, while yet others provide insurance services, and so on? Why should so many bank and nonbank financial firms become embroiled, all together, in a housing-related financial panic?

Those questions point to the second element of financial innovations involving mortgage-backed securities. It involves a key financial discovery: the Black-Scholes formula for dynamic hedging. This formula shows how portfolio managers could minimize their exposure to price risks of securities in their portfolios. It calls for selling the correct amount of options against securities held in their portfolios to diversify away—or hedge—each security's price risk.²² For instance, suppose an investor holds an asset that will likely increase in value, but there is a small chance the asset may fall in value. If the investor is unwilling to expose himself to the risk of loss, he can sell an option on the asset such that the asset buyer would receive part of the gain if the asset experiences a large increase in value. In return, the original investor receives an up-front premium from the option buyer that offsets the original investor's risk that the asset will decline in price. The Black-Scholes formula, if implemented correctly through time, will almost completely eliminate the original investor's price risk. In the words of the original Black-Scholes study, "the return on the (dynamically) hedged position becomes certain."²³

The real world counterparts to dynamic hedging are instruments called credit default swaps (CDSs). These are contracts through which one party pays another a fixed amount for the right to receive a pre-specified payment depending on the occurrence of a specific event—say, the failure of a firm or a security, the change in a security's price beyond a certain threshold, and so on. Such transactions are

useful as they collectively reveal information and beliefs that individual market participants possess about the likelihood of various financial market outcomes. For instance, if CDSs in a certain security were suddenly to become more expensive, it would indicate that the market believes the security has become riskier than previously thought.

So why didn't CDSs and other derivatives used to hedge against mortgage defaults indicate the growing risks in the home finance market? Part of the reason might be that analysts simply underestimated that risk. However, at least part of the reason is the increasingly complex and opaque world of finance. Mortgage-backed bonds, their insurance and reinsurance—using derivative instruments like CDSs—and their sequestration in special-purpose "off-balance-sheet agencies" (called "structured investment vehicles") created a convoluted network of counterparty assets, insurance contracts, and liabilities in which global investment banks, hedge funds, and commercial banks became involved. All of it was motivated by first pooling, and then spreading, mortgage and other investment risks widely among investors across the globe.

Given the complexity of financial instruments and associated interrelationships between financial firms, it's not surprising that most financial firms and ratings agencies were unable to judge properly the risk/return characteristics of firms' portfolios—cash reserves, stocks, bonds, mortgage-backed securities, CDSs, and other derivative contracts. Directors of most large financial, insurance, and even mainline manufacturing companies are frequently unaware of the nature and extent of their firms' involvement in a wide array of financial transactions, including mortgage-backed assets, CDSs, and other derivatives.

The bottom line: no one was in a position to judge the buildup of "systemic risk"—that is, to take account of risk magnification for the financial system as a whole—from a reversion in home price appreciation. As mentioned earlier, the location and distribution of problem mortgages may not be important for investors when housing and most other sectors of the econo-

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my are booming. Positive performance by most loans would offset the likely minimal losses on problem home loans. The risk of default would remain low as homeowners continued to benefit from surging home prices and homes backing distressed mortgages could be sold easily and at a profit. With the bursting of the house price bubble, however, the exposure of mortgage-backed securities to problem loans underwent a quantum increase, and the location of such loans suddenly became very important for investors and insurers.

Now, underperforming mortgages could potentially dominate positive performers, and investors need to know where the former are located to maintain confidence in their overall lending operations. The lack of knowledge of the overall distribution and locations of risky assets across financial firms can itself lead to risk magnification.²⁴ It occurs because all investors simultaneously (and rationally) re-evaluate their counterparties' risk exposure and creditworthiness and reduce their lending. Very few market participants, if any, can anticipate and assess the consequences of an immediate upward reevaluation by all participants of their own and other participants' risk exposures on account of a joint negative shock to their asset values. This process can become self-fulfilling: constrained credit flows to financial and mainline firms worsen economic performance and fulfill creditors' prior expectations of increased default risks.²⁵

Under the ongoing housing price decline, it may be that most investors and financial companies are exposed to only a small amount of risky (subprime) mortgage-backed securities. But firms' portfolio compositions are not public information. The possibility that one's financial counterparty (options trader, borrower, insurer, and so on) may be exposed to significant housing-sector risks stimulates a behavioral change in financial firms' willingness to lend. And when firms are highly leveraged, sudden adverse market conditions and creditor demands that borrowers demonstrate their ability to service debts can trigger a scramble for cash that can prove disastrous for

those with a low capital base.²⁶

In this regard, a key issue is whether policymakers themselves understand that once a systemic shock is in motion—a process of deleveraging by withdrawing, recalling, or selling the financial firm's investments to obtain cash and consolidate its capital base—investors and other market participants are especially sensitive to news about the financial sector's and the economy's prospects. Any announcements that market and economic prospects are worsening can become self-fulfilling. Thus, recent high-visibility press conferences and speeches by policy officials to discuss how the current financial crisis places the economy at great risk probably exacerbated the problem considerably.

Will the Bailout Plan Restore the Economy's Health?

The original Treasury plan to purchase toxic mortgage-related assets from firms' balance sheets has morphed into one where the government directly injects capital into financial firms by purchasing stocks and warrants in those firms. In addition, the Federal Reserve is expanding liquidity through "quantitative easing" measures, guaranteeing interbank loans, purchasing commercial paper, and guaranteeing housing-related obligations of financial companies. The capital injections and added liquidity are intended to restore confidence in financial markets, thaw frozen lending within the financial firms, and ease credit conditions for nonfinancial sectors. So far, the results have been disappointing, and it remains unclear whether they will ever work as desired. If they remain unsuccessful, future taxpayers will be exposed to additional debt burdens to the tune of many hundreds of billions of dollars without inheriting a robust economy.

Economists are split among multiple groups on the wisdom of a government bailout of the financial sector. Opponents of the bailout cite many reasons against it: it would unfairly compensate those who made risky

investments, take too much time to implement, impose losses on taxpayers, push the financial sector onto an irreversible path toward socialism, and so on. Supporters of the bailout think it can still succeed, with some modifications. However, it is likely that a modified bailout will do little to alter the ultimate length or severity of the recession.²⁷

The economy has experienced a negative wealth shock. The housing assets we invested in are worth less than we thought, as reflected by a marked and continuing decline in home prices. The realization that we are not as wealthy as we once thought will modify our economic behavior. We'll consume less and save more. That change is likely to prolong housing price declines as potential homebuyers stay away and homeowners opt to delay or discontinue servicing their mortgages. But higher saving rates may not generate higher total saving if incomes decline simultaneously because of the credit crunch. As a result, financial sector balance sheets may continue to weaken and credit conditions for nonfinancial sectors may continue to tighten. Eventually, the credit squeeze is likely to reduce total output, cause job losses, and result in further declines in home prices. A compounding factor is the associated decline in companies' share prices, again weakening financial sector balance sheets—and so on.

The remedy for a large wealth shock is a large wealth injection, financed either by foreigners or by future generations in the form of deficit-financed asset swaps with financial firms.²⁸ The magnitude of the required asset swaps would have to be much larger than the \$700 billion ammunition provided to the U.S. Treasury by Congress. The Fed's portfolio of Treasury securities (currently about \$1.8 trillion) is also being brought to bear. Consider, however, that during the stock market implosion in 2000, household losses in stock values were offset by housing price increases. The current episode is characterized by wealth losses in both housing and stocks. As of the second quarter of 2008, home prices (based on the nationally representative Case-Shiller home price index, which also controls for home qual-

ity differences) had declined by 17 percent from mid-2007 when household real estate wealth peaked at \$20 trillion. That implies a wealth loss of about \$3.4 trillion.²⁹ The decline in stock market wealth over the same period, including corporate equities, mutual funds, and pension funds, is estimated at \$9.7 trillion, based on a 40 percent decline in stock values since mid-2007.³⁰ Even if some stock market losses are recouped as the market rebounds from its current lows, the total wealth loss will likely remain larger than the bailout fund and expansion of the Federal Reserve's portfolio.

Moreover, the implementation of equity injections is taking inordinately long and it's not clear that they will effectively thaw frozen credit flows. Despite the injections currently under way, credit risk indicators remain elevated. The latest Treasury initiative of purchasing preferred bank stocks of financial firms, broadly defined, is being justified on grounds that they can be implemented speedily and would be more effective at restarting credit flows in the economy. However, government purchases of equities, rather than poorly performing assets from banks, hold other dangers, as described in the next section.

Good Intentions on the Road to Hell

It's difficult to predict whether the U.S. Treasury's initiative to purchase equity stakes in financial firms will succeed in quickly quelling the current financial panic. What is worse, it sows the seeds for a new financial collapse by repeating and compounding the moral hazard problem that has already bankrupted Fannie Mae and Freddie Mac.

The Treasury has injected \$250 billion in exchange for preferred stocks in financial firms. Equity injections were forced on nine of the largest financial firms—even well-capitalized ones, bringing into question the need for such support in the first place.³¹ The purchase of preferred equities is a sharp departure from the Treasury's initial proposal to purchase toxic assets from financial companies that wished

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to unload them. What happened? Perhaps the Treasury didn't receive sufficient bids from financial firms to unload bad assets. That would not be surprising, because accepting government help would be associated with executive compensation limits and forced lending to insolvent homeowners. And it would signal weak asset positions, causing potential private creditors to flee.

Quite likely, actions by the UK government and European Union to inject equity capital in their financial sectors forced the U.S. government's hand. Without similar measures, U.S. banks would be perceived as being riskier and would lose business to European banks. Whatever the short-term reasons for such a move, partial nationalization of financial companies is a bad idea in both the short and long terms.

The difference between debt purchases and injecting equity capital into financial companies is profound. Debt purchases would limit the government's direct involvement with private asset ownership through the point of debt maturity simply because the debt's value will eventually be resolved. Either the government (taxpayers) will make a profit on the debt because its value turns out to be larger than the discounted price paid for it, or it will make a loss if the value of the debt turns out to be worth less. In either event, the government's direct involvement in the private sector is limited to the term of debt maturity.

In contrast, equity infusions into private financial firms will appear as a capital outlay by taxpayers. The advantage of an equity infusion is that it can be implemented relatively quickly and it enables taxpayers to share in the upside of troubled firms' operations after credit flows resume normalcy—more so than through purchases of bad debt from financial firms.³² The problem is that once the financial crisis has passed, there's no guarantee that the government will sell its equity stakes in private financial companies. Continuing government co-ownership would be justified for recovering returns on earlier taxpayer investments and as a way of keeping taxes low. Taxpayers will bear two additional costs as well: additional debt

service for initially financing the equity purchases, and additional business risks. The equity premium over debt-service costs that taxpayers receive will cause marginally greater volatility in federal receipts, which in turn will occasion greater volatility in taxes and larger fluctuations in Treasury bond prices because of larger variability in annual federal deficits.

Perhaps the most important argument against purchasing equity of private companies is the example of Fannie Mae and Freddie Mac. The two government-sponsored enterprises expanded rapidly and obtained cheaper financing because of an implicit government guarantee. Last summer, the federal government was forced to make the implicit guarantee explicit when Fannie and Freddie's operations grew too bloated with questionable mortgage-backed securities, and private investors refused to refinance their highly leveraged portfolios. Purchasing equity stakes in many more private firms will magnify this moral hazard problem. Having invested in financial companies, the government would be forced to prop them up with additional capital injections rather than allow them to fail, thereby risking another financial panic.

The \$250 billion equity injection is supposed to be temporary. However, if the rationale for its implementation in the United States is that many other countries have adopted it, we (and correspondingly, foreign governments) are effectively locked into this policy. Unilateral sales of the U.S. government's equity positions would create an advantage for foreign banks that continue to be backed by their governments—just as implicit government guarantees to Fannie and Freddie conferred a pricing advantage to those agencies among home-loan investors.

In the future, continued government involvement in financial firms may be justified by Congress on several grounds: financial company failures must be prevented to avoid financial panics; a Republican administration, no less, acquiesced in implementing this initiative; foreign banks otherwise would be unduly advantaged, and so on. Chances are, however, that despite promises of stricter regulation of finan-

cial companies, politicians' power and incentives to expand home loans and other credit to those with poor credit records will be strengthened—setting the stage for a future financial panic—because, rather than in spite of, the Treasury's initiative.

Further, capital injections in financial firms raise the prospect of similar injections in non-financial firms in the future, if and when those sectors face difficulties. This Policy Analysis has acknowledged that because of informational asymmetries inherent in credit transactions and the potential for contagion, thoughtful bailout proponents could theoretically justify government intervention to restore proper functioning of the financial sector and avoid systemic risks to the economy. But this argument is not widely appreciated by the public and it can be misappropriated by supporters of broad government intervention in the economy. Unprecedented government capital injections into the financial sector may provoke future calls for similar interventions in autos, airlines, and other nonfinancial sectors were they to encounter negative shocks. Indeed, at the time of this writing, the government has proffered support to two financially troubled Detroit automakers.

Furthermore, a policy of capital injections—forced by international policy competition or otherwise—may prove self-defeating even in the short term. Sound asset positions are a prerequisite for normal lending by financial companies to mainline businesses. We are witnessing how deteriorating assets of financial companies cause cutbacks in credit flows, both within the financial sector and to nonbank businesses. We also know that bank assets include a significant stock market component—direct investments and loans collateralized using private company stocks. The Treasury's purchases of preferred stock in troubled financial firms (a) dilute the value of existing shares, and (b) set a precedent for a similar potential dilution in other sectors. That expected dilution is likely to have contributed to declining stock market values and it implies a further weakening of bank balance sheets, especially if stock values fail to recover quickly. This feedback implies that cap-

ital injections will be less effective at preventing a broader credit crunch than appears at first glance.

Furthermore, the bailout package imposes counterproductive executive compensation limits on firms that participate in government assistance programs. According to the Treasury bulletin on the capital injections program, incentive compensation for senior executives should not encourage unnecessary and excessive risks that threaten the value of the financial institution; any bonus or incentive compensation paid to a senior executive based on statements of earnings, gains, or other criteria that are later proven to be materially inaccurate should be clawed back; golden parachute payments to senior executives would be prohibited; and executive compensation in excess of \$500,000 for each senior executive would no longer be tax deductible for corporations.³³ Similar conditions apply to the Treasury's Troubled Assets Relief Program. But executive compensation limits threaten to make these programs less effective. They provide additional motivation for the financially healthiest firms to avoid the stigma of participation: potential private creditors would deem participating firms as having weaker balance sheets and may avoid lending to them. If the government's involvement continues over the longer term—as appears likely—executive compensation limits may siphon off talented executives to nonfinancial firms and leave a key sector with relatively less qualified and experienced managers.

Long-term Implications

The National Bureau of Economic Research has declared that the financial crisis has triggered a recession—which commenced during the last quarter of 2007. Contrary to what many pundits suggest, this recession may last a while, even beyond 2009. If it does, it will mark the beginning of an era of permanently higher taxes and slower economic growth in developed countries. And it will hasten the impending fiscal crisis in entitlement programs.

Stock markets declined in reaction to both

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the initial failure, and the eventual passage, of the U.S. bailout plan. They have continued to decline despite coordinated efforts by the world's finance ministers and the decision of the U.S. Treasury to purchase bank equity instead of just distressed assets. As home prices decline, financial institutions' balance sheets continue to weaken and the crisis spreads. Broad-based bailouts of financial companies are being implemented in Europe and replicated in the United States. But it remains uncertain whether ongoing fiscal and monetary initiatives will succeed and how quickly.

The past two U.S. recessions were mild, and global economic growth was interrupted only briefly. The hope is that bailouts will keep the current economic recession short-lived and shallow. But what is the likelihood that it will be so? As of this writing, for example, stock markets the world over had declined by 40 to 50 percent from peaks one year ago. As mentioned earlier, those declines place additional strains on financial company balance sheets and may prolong tighter credit conditions.

The two previous recessions in 1991 and 2001 occurred under sound economic fundamentals: highly productive workforces, strong consumption growth, continued advances in global trade, and low taxes. This time around, however, those fundamental forces appear to be considerably weaker.

Consider, first, earnings growth. The most experienced baby-boomer cohorts of U.S. and European workers are now retiring. Although a larger-than-anticipated percentage of older U.S. workers have remained in the workforce in recent years, a prolonged recession could reverse this incipient trend. Credit shortages and diminished consumption are forcing firms to cut costs or downsize.³⁴ Those pressures are likely to hit older workers the hardest, with layoffs forcing earlier-than-planned retirements. Forced or voluntary exits by the most experienced workers in the labor force will reduce overall labor quality and slow productivity and earnings growth. That leads to the conundrum that, as many boomers realize the need to extend their careers to avoid sharp living standard declines during eventual retire-

ment, an economy in recession won't provide sufficient opportunities to many, leading to excess worker supply and stagnant wage growth.³⁶ The current recession could make this phenomenon quite intense. After the U.S. economy emerges from the recession, however, a gradual erosion of labor quality will persist, at least for another two decades, until the boomers are fully retired.

American consumers, who are widely viewed as drivers of global growth, have cut back on spending. Last year's oil price surge slowed spending on non-oil goods. Although oil prices have receded because of the global economic slowdown, other factors will continue to restrain consumer spending growth.³⁶ As the baby boomers approach retirement, concerns about the viability of public retirement programs, recently devalued 401(k) accounts from stock market declines and reduced job security from rising unemployment, may induce many households to increase their rates of saving.

Slower consumption growth among developed economies could be replaced by faster consumption growth in developing ones, especially China and India. Trade has been the one silver lining for the U.S. economy during 2007–2008: as the dollar depreciated, burgeoning exports sustained growth in U.S. output. But that might change with bleaker global economic prospects. Indeed, an improving current account balance during 2007 reversed during the first two quarters of 2008.

Thus far, China's rapid economic growth has resulted from high domestic saving and investment geared toward infrastructure, manufacturing, and exports. With slowing global consumer spending, China may encourage faster domestic consumption growth to sustain its manufacturing sector. Some of the increase in Chinese spending would be on non-Chinese goods and would benefit developed economies' exports and earnings. However, China's policymakers might raise trade barriers in an effort to insulate their economy from a global recession. India is less exposed to a global recession because of its higher import controls and tariffs, but a severe recession in west-

ern countries could provoke a more protectionist posture from India and other developing countries.

Overall, slowing global consumer demand, labor productivity, and, potentially, trade growth, worsen the prospects for private investment spending. In the United States, growth in gross private domestic investment has exhibited a negative trend since 2005 (Figure 7). Together, those forces will make it difficult to recover quickly from the ongoing recession. If the bailout measures in the United States and abroad do not soon restore financial stability—and there are powerful reasons to doubt that they will—policymakers are likely to intensify debt-financed rescue efforts and increase fiscal burdens on future taxpayers. Indeed, as of this writing, Congress is considering an unprecedented debt-financed economic stimulus package.³⁷

Future generations' earnings are already significantly burdened by government obligations to pay public pension and health care benefits to aging baby boomers. According to government actuaries, unfunded obligations on account of Social Security and Medicare

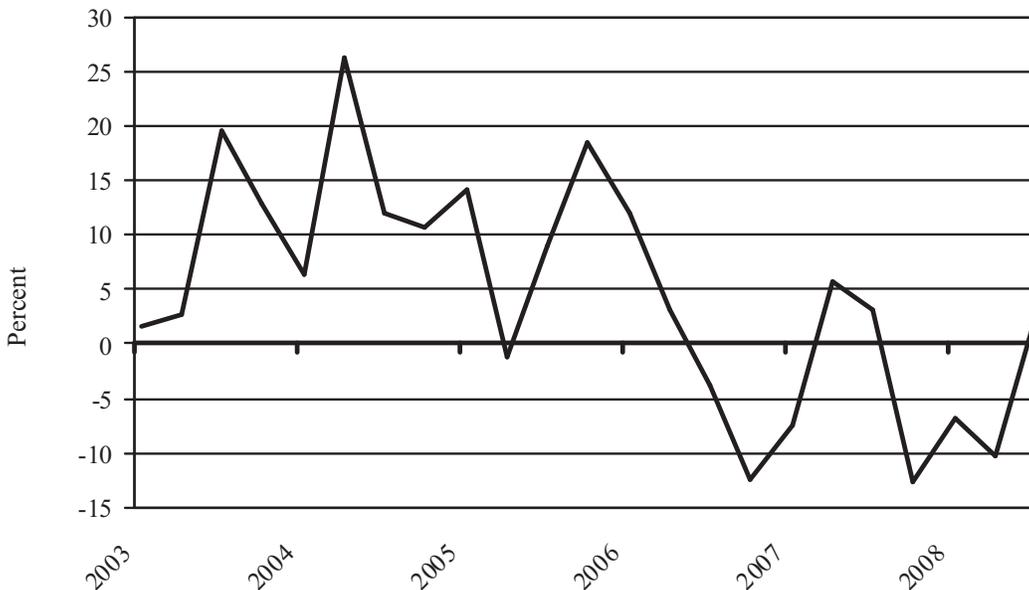
over the next 75 years amount to more than \$40 trillion.³⁸ And Medicaid spending, which has features similar to entitlement programs, will cost another \$16 trillion. In addition, growing imbalances in regional and state government budgets will require steep cuts in services and/or much higher taxes. Unless government entitlements and other commitments can be significantly reduced, the current raging financial crisis could very likely become a watershed moment, marking a shift to an era of permanently higher taxes and, therefore, permanently slower economic growth in the United States.

Conclusion

This financial crisis and the ongoing economic recession were triggered by oil price shocks that began in late 2002 and intensified in 2007. However, the seeds of the crisis were planted years earlier, as policymakers purposefully altered financial market regulations with the intention of promoting U.S. homeownership. That policy prompted financial innova-

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Figure 7
Growth in Private Domestic Investment
(Quarterly growth at an annualized rate)



Source: U.S. Bureau of Economic Analysis.

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tions to pool and spread mortgage risks and channeled the global surge in saving into U.S. mortgage-backed assets, especially into sub-prime and Alt-A home loans. Those innovations were tailored to reduce investors' exposure to the risk of localized real estate downturns. However, the innovations simultaneously hid the extent and location of those risks within financial firms' asset portfolios and magnified the risks of a broad financial sector failure. Consequently, a downturn in home prices since 2006, increasing mortgage defaults, rising foreclosure risks, difficulties in evaluating the quality of mortgage-backed securities, and high leverage of investment banks made creditors extremely fearful of lending to financial institutions with high risk exposures to mortgage-related securities.

Investment banks failed at regular intervals during 2007 and 2008. Short-term credit flows collapsed, jeopardizing funding for mainline businesses and spawning a sustained negative economic spiral. Financial sector disruptions have reduced consumer confidence. Now, lower consumption is reducing output, employment, and stock market values, further weakening consumer and financial market confidence. Eventually, trade flows may also be negatively affected if a global recession provokes anti-trade policies as emerging economies seek protection for domestic producers and workers.

Sustaining consumption and investment in the face of a housing wealth shock requires supplementary resources and an expansion of the pool of risk-bearing investors. Only foreign savers and future generations could play this role. Indeed, U.S. government debt-financed wealth injections financed by future generations could encourage foreign savers to boost their capital investments in U.S. financial firms and restore the financial sector's health.

The appropriate manner of channeling debt-financed government assistance to financial firms, however, poses a difficult challenge. The multifarious fiscal and financial initiatives of the U.S. Treasury and Federal Reserve, respectively, have not worked so far and are unlikely to restore market confidence. Under the theory of financial market incompleteness

and failure, government debt-financed intervention should be temporary, intended to restore markets to health and not permanently supplant market operations with government management. Instead, current initiatives appear panicked and poorly designed, threaten to deplete talented financial sector personnel, and suggest a trial-and-error process, which only injects more uncertainty into markets rather than restoring participants' confidence. The government initiatives being implemented are biased toward introducing permanent interventions in market processes and institutions to the probable detriment of the nation's long-term economic prospects.

The bias toward making the government's expanded role in economic management permanent is emerging because the current financial mess is being unjustly blamed on market forces rather than on prior government policies. Politicians of both parties paid lip service to reforming home-loan institutions—Fannie Mae and Freddie Mac—in order to make their portfolios and operations financially sustainable. Instead, policymakers commenced aggressive promotion of home lending volumes since the 1990s. Absent policies to promote homeownership among poorly qualified borrowers, non-bank financial firms may have followed more prudent lending policies to minimize risk exposures during the 1990s and early 2000s. And global investors might have redirected their funds to other sectors and countries to generate more balanced risk exposures and sustainable increases in U.S. home values.

The fallout from the financial crisis will be the forced increase in future generations' debt burdens to fund the financial bailout plan and a massive economic stimulus package that the U.S. Congress appears very likely to enact soon. The increased government borrowing will add to the already massive implicit debt burden that future generations face on account of federal entitlement programs. Conventional wisdom holds that fiscally responsible public policy reforms of entitlement programs won't emerge until a budgetary crisis becomes imminent. If the current financial crisis metastasizes, the tax base shrinks, and tax rates become per-

manently higher, economic growth will be slowed and the entitlement crisis will be upon us sooner than we have been expecting.

Notes

1. The National Bureau of Economic Research's Business Cycle Dating Committee has not declared the start of an official recession as of yet, but recent data on broad-based output and employment declines imply that the official declaration of an economic recession beginning in the third quarter of 2008 is highly likely.

2. See Lutz Killian, "The Economic Effects of Energy Price Shocks," *Journal of Economic Literature* 46, no. 4 (December 2008). Killian suggests that the primary impact of higher energy prices is transmitted through changes in consumer and firm demands for goods and services—a decline in aggregate demand and a shift in demand away from energy-intensive goods, for instance, autos and homes, that ripples through the economy.

3. According to the National Association of Realtors, total housing inventory at the end of July 2008 increased by 3.9 percent to 4.67 million existing homes available for sale, which represents an 11.2-month supply. This includes condos, single-, and multi-family homes.

4. Data for the Case-Shiller composite index are taken from the St. Louis Federal Reserve's website using their economic data download service known as FRED.

5. See David Streitfeld and Gretchen Morgenson, "Building Flawed American Dreams," *New York Times*, October 19, 2008. The article documents how "as the Clinton administration's top housing official in the mid-1990s, Mr. Cisneros [head of the federal Department of Housing and Urban Development since 1993] loosened mortgage restrictions so first-time buyers could qualify for loans they could never get before."

6. Alt-A mortgages are those that do not satisfy all criteria to qualify as "conforming" mortgages guaranteed by government-backed home loan agencies like Fannie Mae and Freddie Mac. The nonconforming features could include poor documentation of assets and income, high total borrower debt-to-income ratios, too many problems in the borrower's credit history, or too high loan-to-value ratio for the mortgage under consideration. Alt-A borrowers have considerably better qualifications on those criteria than subprime borrowers.

7. The Bush administration repeatedly urged reforms for Fannie and Freddie, but not sufficiently vigorously to result in any legislation before 2006, when Republicans enjoyed majorities in both houses of Congress. The push for expanded homeownership through the actions of Fannie and Freddie received bipartisan support throughout the early 21st century, and calls for reforming the two financial institutions were derided as creating an "artificial issue." See Barney Frank, "GSE Failure, A Phony Issue," *American Banker*, April 21, 2004.

8. According to the National Association of Realtors, delinquency rates increased across the board on a year-over-year basis. Seasonally adjusted delinquency rates moved up 120 basis points for prime loans, 385 basis points for subprime loans, 5 basis points for FHA loans, and 67 basis points for VA loans from the second quarter of 2007.

9. See Wayne Passmore, "GSE Implicit Subsidy and the Value of Government Ambiguity," *Finance and Economic Discussion Series* 2005-05, Federal Reserve Board, 2005, <http://www.federalreserve.gov/Pubs/feds/2005/200505/200505pap.pdf>.

10. For a more detailed discussion, see Gary Gorton, "The Panic of 2007," National Bureau of Economic Research working paper no. 14357, October 2008.

11. In an October 15, 2008, speech to the City Club of New York, Fed Chairman Ben Bernanke suggested that, like AIG, Lehman was "large, complex, and deeply embedded" in the financial system, but the firm could not provide assurance that a Fed loan would be repaid. Neither did the Treasury have authority to absorb losses from underwriting Lehman's weak assets. That justification for allowing Lehman to fail is curious when considered in light of other, almost apologetic, statements that financial firm failures must be prevented when they pose systemic risks and that the Fed will work closely with other authorities to minimize such risks.

12. The TED spread's normal range is between 0.2 and 0.4 percent. During early August of 2007, its value doubled from 0.44 to 0.87 within the span of five days. It continued to fluctuate between 1.00 and 2.00 percent during the entire year. However, in mid-September 2008, it skyrocketed to above 3.0 percent and continued to climb. During October 2008, at the time of this writing, the spread has remained consistently above 4.0 percent—nearly 10 times its normal level.

13. See Robin Sidel, "Abu Dhabi to Bolster Citigroup, with \$7.5 Billion Capital Infusion," *Wall Street Journal*, November 27, 2007. See also

Edward Evans, “Merrill Lynch Gets \$6.6 Billion from Kuwait, Mizuho,” *Bloomberg*, January 15, 2008. These capital infusions are considerably smaller than the \$700 billion recommended by Treasury Secretary Henry Paulson and appropriated by Congress. Bloomberg data available at <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aDmQ66OoJbfw> shows that, globally, write-downs by financial firms on account of credit losses far exceed the amount of new capital raised, as of August 2008.

14. See Joseph E. Stiglitz and Andrew Weiss, “Credit Rationing in Markets with Imperfect Information,” *American Economic Review* 71, no. 3 (June 1981): 393–410.

15. Note, however, that it is only an assumption that future generations will be wealthier than current generations. Borrowing excessively from future generations to bail out current generations—by bequeathing a large debt burdens to future taxpayers—may negate that assumption because debt service may necessitate very high future taxes. Given the already sizable fiscal imbalances implied under current federal and state government fiscal policies, borrowing additional funds from future generations risks significantly reducing future economic growth prospects. The last section of this Policy Analysis discusses prospects for future economic growth in more detail.

16. A clear distinction between market incompleteness and market failure needs to be maintained. Were current generations and their wealth around today (that is, were markets complete), they would share potential foreign lenders’ fear about current generations’ creditworthiness and the market failure would persist. However, because under market incompleteness, future generations’ welfare depends on the economic success of current ones, it is assumed that they would willingly extend support to current generations without regard to considerations of creditworthiness and returns on their “loans.” That is, they would ignore the causes of current financial market failure in helping to overcome it.

17. Private companies cannot perform this function because, were they to attempt it—say, by increasing pension commitments to current workers—those additional liabilities would be immediately and fully offset by the companies’ reduced share prices. The government, on the other hand, suffers little adverse effects on its creditworthiness from deficit-financed capital injections into firms today because government has the power to levy taxes or spend less in the future to service its debts. Note that the lack of adverse impact is predicated on injecting capital

into firms rather than using the funds for additional consumption. As such, the injections are expected to be substantially recouped once the financial sector is restored to health. If the additional borrowing were intended to fund increased current consumption, then interest rates and government debt service costs would increase. Note that the previous footnote’s argument implies that future generations would not care how the funds were used so long as they successfully restored the efficient operations of financial markets and the economy.

18. The three main nationally recognized statistical research organizations are Moody’s, Standard and Poor’s, and Fitch.

19. For a more detailed discussion, see Gorton.

20. See Ben Protess, “‘Flawed’ SEC Program Failed to Rein in Investment Banks,” *ProPublica* (October 1, 2008), <http://www.propublica.org/article/flawed-sec-program-failed-to-rein-in-investment-banks-101/>. Protess documents how the SEC’s “consolidated supervised program” relaxed minimum capital requirements for firms that submitted to SEC oversight—a program that is believed to have allowed the tremendous increase in leverage ratios of erstwhile investment banks.

21. For a good discussion, see William Poole, “Fundamentals of the Financial Crisis: Mismanaging Risk” (speech to Delaware Captive Insurance Association, October 2008).

22. Options are contracts that provide the holder with the right to purchase (or sell) securities at a predetermined price and by a preset date. See the description by Robert C. Merton in his article on options in the *New Palgrave Dictionary of Economics*, 2nd ed. (2007).

23. See Fischer Black and Myron Scholes, “The Pricing of Options and Corporate Liabilities,” *Journal of Political Economy* 81, no. 3 (1973): 637–54.

24. The idea of risk magnification may have motivated a famous comment by Warren E. Buffet: “In our view . . . derivatives are financial weapons of mass destruction, carrying dangers that, while now latent, are potentially lethal.” See (annual letter to shareholders of Berkshire Hathaway Inc., February 21, 2003), <http://image.guardian.co.uk/sys-files/Business/pdf/2008/09/15/2002.pdf.pdf>.

25. A question that remains is why investors in securitized mortgage assets did not price the risk appropriately. Some argue that this mispricing emerged as a result of “agency problems”—the undervaluation of risks by rating agencies was not

adequately monitored or questioned by investors. See Charles W. Calomiris, "The Subprime Turmoil: What's Old, What's New, and What's Next," (mimeo, October 2008). Ratings' agency officials, however, claim that their ratings were adequately "stress tested" and that investors mistakenly took ratings "point estimates" as investment advice rather than just one factor among many they should have considered when making investment decisions. See remarks by Deven Sharma, president of Standard and Poor's Ratings Agency, http://www2.standardandpoors.com/spf/pdf/media/Sharma_FDIC_Final.pdf.

26. Indeed, AIG's trading strategy in the CDS market was predicated only on key characteristics of the assets being insured. It did not take account of the risk that creditors would demand additional collateral as evidence of creditworthiness in a declining housing market. See Carrick Mollenkamp, et al., "Behind AIG's Fall, Risk Models Failed to Pass Real-World Test," *Wall Street Journal*, November 3, 2008, A-1.

27. See Ben Bernanke (speech before the City Club of New York, October 15, 2008). Chairman Bernanke hints that the economy will take a long time to recover even if the financial sector returns to relative normalcy in the near future as a result of government actions among developed countries.

28. Some observers have recommended that homeowners should be directly helped via debt renegotiations to prevent escalating foreclosures. This step is politically popular but if it results in keeping unqualified homeowners in their homes—those with sub-prime and Alt-A mortgages who are now unable to service their mortgages—it could worsen the incentives of other homeowners to continue servicing their mortgages. The market failure is in the financial sector, where normal credit flows need to be restored. Hence, most of the bailout funds should be channeled toward the financial sector. Indeed, directing the funds to directly bailing out poorly qualified homeowners compounds and extends the initial error of aggressively pushing for increased homeownership instead of sustaining and strengthening regulations against imprudent mortgage lending. See Edward Glaeser and Joseph Gyourko, "The Case against Housing Price Supports," *Berkeley Electronic Press* 6, no. 5 (2008).

29. See Jordan Rappaport, "A Guide to Aggregate House Price Measures," *Federal Reserve Bank of Kansas City Economic Review* 2007, no. 2.

30. The same method of estimating total stock market capitalization is followed by Karl E. Case, John M. Quigley, and Robert F. Shiller in "Comparing Wealth Effects: The Stock Market

versus the Housing Market," *Berkeley Electronic Press* 5, no. 1 (2005). The large number of unsold homes and the decline in home prices reflects a reduction in our valuation of homes that are already built. The decline in stock market values also does not reflect any immediate decline in the nation's overall productive capacity today. However, it does reflect market participants' views of how efficiently and profitably we'll use that capacity in the future, given the financial sector's disruption. Moreover, the decline in stock market wealth is likely to negatively affect households' consumption, saving, investment, and risk-taking behavior. That may further impede the full use of the nation's tangible productive assets.

31. This announcement may be intended to deflect attention from the fact that those who receive bailout funds would have the weakest balance sheets among healthy financial firms—to prevent others from refusing to conduct business with them.

32. Another advantage claimed by proponents of capital injections compared to purchases of bad assets from financial firms is that the former is associated with a larger credit multiplier. It is not clear that this claim is correct. Under the former, for each extra dollar of capital that the firm receives, it can support multiple dollars of loans. But the toxic mortgage-backed assets would remain on firms' balance sheets, which must use up some firm capital to limit leverage ratios and which may continue to hinder borrowing and lending activity because traders continue to worry about the soundness of their counterparties' balance sheets. Purchases of toxic assets would occur at a discounted price and would provide less than a dollar of loanable funds for each dollar of such assets sold to the government. Hence, the credit multiplier will create a smaller dollar amount of extra loans. But the government's bailout budget is bounded at \$700 billion. Under either strategy, financial firms as a whole would receive the same total increment in loanable funds. Under the latter, however, toxic assets would be eliminated along with traders' worries about the soundness of their counterparties' balance sheets.

33. See the Treasury Department's announcement on Executive Compensation Rules under the Emergency Economic Stabilization Act, <http://www.ustreas.gov/press/releases/2008101495019994.htm>.

34. See "GDP and the Economy: Final Estimates for the Second Quarter of 2008," Bureau of Labor Statistics, Survey of Current Business, October 2008, http://www.bea.gov/scb/pdf/2008/10%20October/1008_gdpecon.pdf.

35. A recent demographic and economic simulation by the author suggests that the retirement of the boomers is likely to introduce a long phase of sluggish productivity and wage growth in the United States. See Jagadeesh Gokhale, *Social Security: A Fresh Look at Reform Alternatives* (Chicago: University of Chicago Press, forthcoming).

36. See Killian.

37. See Paul Krugman, "Let's Get Fiscal," *New York Times*, October 17, 2008.

38. See the Annual Reports of the Social Security and Medicare Trustees, 2008.

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