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Viewing the Financial Crisis from 20,000 Feet Up

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Executive Summary

The U.S. economic crisis is seriously damaging both the financial system and the real economy. The crisis is systemic but the system itself is so complicated and the individual parts of it are so complex, that commentators, policy makers, and the general public are focusing on the details rather than on the big picture. This article offers a different perspective: an overview of the whole system, as if from 20,000 feet above it, that allows us to see the systemic nature of the crisis without being distracted by its complex details. From that perspective one can gain an intuitive understanding of what is happening, and a framework for assessing the damage that is still ongoing as well as possible actions to deal with the situation.

The first part of the article explains a crucial property of financial securities, including all derivatives no matter how complicated, that allows us to look at the whole financial sector as a unified system without having to consider all of its moving parts. Taking this broad perspective reveals how the economy can be stabilized by government intervention that would effectively disconnect the financial system from the enormous risk that is being generated in the real economy and is causing it to break down.

Here are the main points of the argument, that are set out in detail in the article.

1. Every financial instrument, like an insurance contract or a home mortgage, has two sides. If the party on one side pays a dollar the other party receives that dollar. If one party defaults and fails to pay a dollar that it owes, that is a dollar the other party loses. This makes a financial security a "zero-sum game," meaning that one party's loss is a gain to the other, and the gain plus the loss must always sum to zero.
2. The entire financial system is made up of zero-sum contracts, so it is also zero-sum in aggregate. Since each contract has a winner and a loser, the financial sector does not create losses and it does not eliminate losses. Profits and losses, and the uncertainty about those profits and losses which translates to risk, are generated in the real economy. These are passed dollar for dollar through the zero-sum financial system, which distributes them to the ultimate investors who receive those profits and losses and bear the risks.
3. The financial system operates as a zero-sum game, but because it facilitates the efficient transmission of credit from lenders to borrowers and creates financial instruments with return and risk characteristics that investors want, its existence produces large economic gains for the economy as a whole. Those gains lower the cost of credit to borrowers, make returns for investors higher and less risky than they would otherwise be, and cover the costs of running the system. We will begin to lose these benefits if we allow significant portions of the financial system to break under the strain of the current crisis.

4. Right now the housing bubble of the last several years is deflating, which is producing a loss of trillions of dollars in the total value of real estate in the real economy. That loss is being pumped through the financial system. But the system does not have the capacity to handle such a large loss, and the extreme risk of more to come, and it is breaking down under the strain.

5. The pressure on the financial system can be removed by effectively disconnecting it from the source of the risk that is too much for it to bear. Doing so would allow it to stabilize immediately. One way the Federal government could do this is by stepping in between the homeowner and the mortgage lender and guaranteeing that the monthly payments on all mortgage loans would henceforth be made as originally scheduled. The financial system has no trouble at all in valuing default-free securities with known cash flows, so this would remove the uncertainty that has paralyzed it. Mortgage-backed securities, no matter how complicated, would immediately become as safe and as marketable as Treasury bonds.

6. In this approach, the government would also take the place of the mortgage lender in dealing with the homeowner. The terms of the mortgage could then be renegotiated freely, to reduce the number of defaults. The government would also gain control of the foreclosure process, which would allow it to limit the human cost of families being evicted from their homes, and the financial cost of throwing repossessed houses onto an overloaded real estate market where they can not be sold.

7. The most important element is to disconnect the financial system from its current exposure to risks from the real economy by transferring those risks to the government. Doing so would calm the financial markets and leave the government in a good position to defuse the effects of the credit crisis on the real economy. The Treasury's \$700 billion bailout program will reduce the market's risk exposure and provide capital by purchasing mortgage-backed securities that have become too toxic. This will help but it is essentially treating the symptoms without curing the disease, so it is unlikely to be really effective until we also deal with the source of the losses in the real sector. Adding a program like the one proposed here would both remove the market's uncertainty about what these securities are worth and also reduce the amount of actual losses, which would make the Treasury's plan work a lot better and cost less.

8. The plan described below is not a full-fledged proposal. It presents a basic approach that the preceding discussion makes clear would stabilize the system. Implementation of any plan of this sort would inevitably produce winners and losers. The devil is in the details, and no effort is made to deal with those details here. However, the cost of even the basic plan could be surprisingly small considering the size of the overall problem. Aside from the relatively minor expense of administering it, it would only cost the government money if a homeowner defaulted and the amount recovered after the house was eventually sold did not cover the outstanding balance on the original mortgage loan. If the plan outlined below caused the housing market to stabilize quickly these losses, and the total cost of the plan to the taxpayers, would be relatively small.

Introduction

We are facing the most serious financial crisis in several generations. In the real economy, millions of people are defaulting on their mortgages and losing their homes. The financial community has been rocked by gigantic losses and venerable firms have been brought down. The Federal government is in the process of committing more than \$1 trillion in an attempt to stabilize the markets, with no guarantee that it will succeed.

People are upset and angry because they don't understand what is going on. One reason is that the problems are so large and involve so many parts of the financial system that you can't get your mind around the whole thing. So different commentators focus on different aspects of it. Some try to explain how our largest financial institutions lost so much money and what this means for the future of Wall Street. Others look at the devastation being wreaked on families who are being forced out of their homes and neighborhoods where houses are standing empty, unable to be sold. Still others report what the Fed, the Treasury and the Congress are doing, in the midst of a Presidential election, to resolve the crisis. And in the middle of it all are a great variety of impossibly complex and risky derivative securities. People don't know how derivatives work, but they do know they have led to huge losses for a lot big firms, which suggests they are somehow at the root of the problems. And, if so, those involved in creating and trading them are largely to blame for causing the crisis.

I am not going to try in this article to explain how a credit default swap on the mezzanine tranche of a subprime mortgage CDO works. What I hope to do is to give an intuitive understanding of how the whole system fits together, starting with a crucially important property of all financial instruments, including derivatives. The key insight is that each one is what is known as a zero-sum game. This property allows us to aggregate the entire financial system and think about it as a single unified entity, without having to consider the details, just as if we were looking down on it from an airplane 20,000 feet above the ground. From that height we can see how huge losses in the real economy, coming from falling real estate values as the housing bubble deflates, are being passed through the financial system. But the system has become overloaded: It is simply not capable of dealing with losses on this scale and it is breaking under the strain.

After laying the foundation that the zero-sum game concept applies to the entire financial system, I describe how the crisis may be defused by effectively disconnecting the financial system from the source of the risk that is too big for it to handle. That would immediately stabilize it. It would also set the stage for government action that would help calm the chaotic situation in the housing market where the unmanageable risk is arising. The approach I offer below is not meant to be a full-fledged plan, by any means, but rather an outline of a program that the earlier discussion should make clear could be a basis upon which a complete plan would be developed.

In the end, I hope to have given the concerned non-rocket scientist a better understanding of what is happening in the economy, a clearer view of the role all those exotic derivatives play, and a way to think about proposed solutions to stabilize the system and to regulate it in the future.

The Financial System as a Zero-Sum Game

We begin at ground level, with a close look at how two common financial instruments, homeowners insurance and home mortgages, pass risk from the real economy through the financial system. This will make clear what I mean by a zero-sum game.

As the year 1900 began, Galveston was a thriving town of 42,000 people, the largest city in Texas. But that September, Galveston was hit by a massive hurricane that killed about 1 in 5 of the inhabitants and washed away most of the town.

In those days, finance was mostly local. You bought a house by taking out a mortgage loan from the local bank. You kept your savings in the bank as well. Many homeowners had no insurance, and after the hurricane those that did ended up receiving little or no compensation for their losses because their insurance company was either wiped out itself, or overwhelmed by the total size of the losses they needed to cover. Survivors of the storm found they had lost everything, their houses, their possessions and their life savings.

This year a massive hurricane named Ike struck Galveston again. Fortunately, there was relatively little loss of life, but billions of dollars of property damage. Who will bear the losses this time?

Let us focus on a single homeowner. We'll call him Homer. Suppose that before hurricane Ike washed it away, Homer's house was worth \$300,000 which was financed by a \$250,000 mortgage loan. For the sake of the example, let us also suppose that the house was insured against losses up to \$225,000. Homer has lost a \$300,000 house but a good portion of that will be made up by insurance.

Insurance companies expect there to be some losses on the policies they write, so they hold loss reserve funds more than sufficient to cover expected damage claims in a normal year. Those reserves are the first line of defense. But the possible losses in a major hurricane are bigger than a single company can bear on its own, so Homer's insurance company purchases protection against a really large disaster from other insurance companies, known as reinsurers. This spreads the risk out further.

If an event produces losses greater than are covered by its reserve fund and reinsurance, the insurance company must dip into its own capital. The uncovered portion of the loss then lands on the company's shareholders.

Hurricane Ike washed away Homer's house and destroyed \$300,000 of real assets. Someone will end up bearing that loss. In 1900, Homer would probably have borne it all; in 2008 much of it has been passed on to others through the financial system.

The insurance company absorbs \$225,000 of the loss. That means Homer, who is on the other side of that insurance contract, saves \$225,000 that he would otherwise have lost. This kind of contract is called a "zero-sum game": if the party on one side loses, that exact amount is received as a gain by the party on the other side. The loss to one plus the gain to the other must exactly offset and sum to zero. This is not just a theoretical principle; it is a matter of accounting.

Going further, if the total loss is large enough that the reinsurance coverage kicks in, once again, each dollar of loss to the reinsurance company is a dollar less that Homer's insurance company loses. It is another zero-sum game. Similarly, if the company exhausts its coverage and pays Homer's claim out of firm capital, here again each dollar the shareholders lose is a dollar Homer gains.

We will see in a minute how the contracts involved in mortgage finance are also zero-sum games. In fact, this principle extends in the same way all the way through the entire financial system, because every one of the financial contracts that form the connections among the millions of firms, financial institutions and individual borrowers and lenders is a zero-sum game.

The most important thing to see in this process, which is highly relevant to understanding our current financial crisis, is that losses arise in the real economy and someone has to bear them. The entire financial superstructure, no matter how complicated it may be, consists of zero-sum game components. It does not generate additional losses and it does not eliminate losses. It just distributes the losses that occur in the real economy to those who will ultimately bear them. In our highly developed financial system, Homer's loss will end up being distributed in minuscule amounts to millions of investors all over the world.

Since our financial system is entirely made up of zero-sum securities and contracts, it must also be zero-sum in aggregate. It is this important property that lets us look at the whole financial system as a single zero-sum entity, as if we were 20,000 feet up, and think about how it works as a unified system.

But first an obvious question: If the financial system is zero-sum for the people trading contracts, how are the people who run it all able to pay themselves generous salaries?

One part of the answer is that financial firms run the system, but many also operate as investors, earning high returns from placing their capital at risk. When those returns become losses, however, their capital is reduced, which limits their ability to make risky investments but also diminishes their ability to perform their role as financial intermediaries in the financial system.

But most of the answer is that having a financial system creates enormous value for the economy. The cost of running the system, including the salaries, comes out of the overall profits it generates.

To see this, think about Homer's insurance. He faces a large risk and he is happy to pay for insurance that will protect him from it. Suppose insurance coverage costs \$100 a month. He would still buy insurance even if it cost \$120 a month, so he's getting a good deal relative to what he would be prepared to pay. The financial system takes on Homer's risk, repackages it into forms that are palatable to investors, and distributes it in infinitesimal pieces across a vast number of investors around the globe. They might be happy to insure that risk for compensation equivalent to only \$80 a month. If they actually get paid \$90, they also are getting a good deal. And there is \$10 left over.

We can think of it this way: Homer has a zero-sum insurance contract with the financial system to which he pays \$100 a month. The financial system has a zero-sum contract with the ultimate investors from which they receive \$90 a month in total. The two zero-sum contracts make both Homer and the ultimate investors happy, and the financial system generates \$10 in profit that supports the system.

Where this reasoning fails is when a loss is so great that the financial system breaks. An insurance company that loses its reserve fund is less able to provide insurance coverage. Policies it has written for other customers are compromised, and if the company loses its capital too, and is driven into bankruptcy, its customers lose their insurance coverage, its employees lose their jobs, and other real economy losses result.

Mortgage Securities as Zero-Sum Contracts

Now let's apply the same kind of reasoning to Homer's mortgage. In 1900, a bank made a mortgage loan and kept it on its books as an investment. When the houses in Galveston were destroyed, so were the local banks, because their assets were gone.

The system for financing mortgage loans today is quite different. Homer's local bank arranged his mortgage loan initially, and continued to collect the monthly payments afterwards. But unlike the old days, the local bank did not keep the mortgage on its books as an investment. Soon after origination, the loan was sold to a larger bank which combined it with other mortgages into a mortgage pool. New securities backed by the pool of mortgages were then created. Some of those mortgage-backed securities were sold in the financial markets to long term investors. Some were pooled together with other mortgage-backed securities and became the underlying assets that supported creation of more complicated mortgage derivatives.

The process is called securitization, because the mortgage loans are effectively transformed into securities. All of the new securities are "derivatives," which means that their value "derives from" the value of the underlying pool of mortgage loans. Every derivative is a zero-sum game instrument. Although they are different in nature from

insurance contracts, it is still the case that if a dollar is lost on one of the loans in the pool, the total payout to the mortgage-backed securities backed by that pool falls by a dollar.

Poor Homer! After receiving the insurance payout, he still owes \$25,000 on his mortgage. But he no longer has the resources to pay it and he has to default. At this point, the loan will be unwound. The \$225,000 from the insurance company will cover part of the principal on the loan, which is being paid off early. The remaining \$25,000 will be written off as a loss due to default.

The insurance payout goes to the local bank, which passes it to the bank managing the mortgage pool, which pays it out to the holders of the mortgage-backed securities. There will be more redistribution through the system if some of those securities have gone into pools supporting further mortgage-backed derivatives, and so on. But in the end, every dollar will have been passed through the financial system to the ultimate investors.

The same is true of the distribution of the loss from the \$25,000 write-off. Let's follow how that works. Homer owes \$25,000 but he walks away and pays nothing. So, relative to what he was supposed to pay, he has gained \$25,000 and the mortgage lender loses \$25,000. Homer's gain plus the \$25,000 loss of principal on the mortgage sum to zero.

The bank that bought Homer's mortgage is informed of the default, and then writes down the principal value of the mortgage-backed securities that had been created from the mortgage pool. Some securitizations are structured so that the new securities would share this loss equally. But that means that the buyers of those securities are stuck with default risk, that no one likes. Other structures involve creation of different classes of derivative securities that divide up the exposure to default risk differently. In the end, though, every one of them is a zero-sum contract, so the loss will be parceled out among them in such a way that the total is exactly \$25,000.

Why has financing mortgage loans led to such a proliferation of complex derivatives? It starts with the fact that every individual mortgage loan, like Homer's, carries with it exposure to two major types of risk: default and prepayment.

That a borrower may default and fail to pay back some of the principal on the loan is an obvious risk. Prepayment risk comes from the fact that the loan contract commits the borrower to monthly payments over a period of typically 30 years, but most homeowners pay off early. They may sell their house and move away; they may default, leading to foreclosure and liquidation of the property; or they may simply repay the existing mortgage and refinance at a better interest rate when the opportunity arises. This creates risk because the lender is uncertain how long the payments on a mortgage loan will last and there is a good chance that it will be repaid at a time when it is hard to reinvest the money at an attractive rate.

Pooling mortgage loans and creating new securities makes it possible to rearrange the exposure to those risks. In aggregate, because they are zero-sum, the new securities will take on all of the prepayment risk and default risk exposure of the mortgage loans in the underlying pool. But what the securitization process does is to allow these risks to be

concentrated into a small number of specialized securities. This means that most of the newly created mortgage-backed derivative securities bear little prepayment risk and are almost entirely insulated from loss from default on the individual mortgage loans, which makes them especially attractive to risk averse investors.

The securities that receive nearly all of the risk exposure distilled from the underlying mortgage loans are naturally highly risky instruments, often called "toxic waste" in the trade. They are bought by the most sophisticated and risk tolerant investors, and their returns are also very high on average to compensate for the large risk. It is important to see that because the risk exposure is inherent in the underlying mortgage loans, ultimately it all has to be borne by someone. Although they look, and are, very risky, it is the existence of the toxic waste securities that makes it possible for most mortgage-backed securities to be as safe and sound as high-grade corporate bonds.

In the end, the ownership of Homer's original mortgage loan, and all of the risk attached to it, has been dispersed through the financial system to the point that, like his insurance, bits of it are contained in investment portfolios throughout the world. But the critical feature is that, as with his homeowners insurance, every step in the process is a zero sum game.

Viewing The Financial System from 20,000 Feet Up

Having seen close up that all of the complex connections within the financial system are zero-sum, we are now ready take a broad view, as if we were far above it.

From that height, complex details are not distinguishable. One sees the real economy in which millions of individual Homers own houses that they have financed with mortgage loans. There are also millions of savers, who all want to invest in securities with high returns and low risk. And connecting the two is an amazing series of financial pipes and tubes that transmit money from the savers to the borrowers to fund those mortgage loans, and transmit the monthly mortgage payments, the prepayments, and the losses in case of default back from the homeowners to the savers. We can't see exactly how it all fits together, but knowing that the financial system all adds up to a zero-sum game means we can ignore the details and focus on the overall flow through it of funds and risk from the real economy.

A bird's eye view on the financial system reveals that the financial crisis is arising in the real economy from huge losses caused by the bursting real estate bubble. As long as the financial piping remains intact, the total loss will be "only" the drop in real estate values. But unlike the Internet stock bubble of a few years earlier, the fall in house prices involves a much larger class of assets, whose values affect everyone. How much of a bubble is actually bubble and how much is true value can't be known until after it has deflated and prices have stabilized at lower levels. That process is still ongoing in the housing sector, and what level prices will eventually get to depends heavily on what we do in the meantime to manage the crisis. In the end, the total drop in real estate values will likely be in the trillions of dollars.

While the financial system is very efficient in handling real economy risks in normal times and even in fairly bad times, from 20,000 feet up we see that it is simply not capable of dealing with real sector risk of the magnitude we are facing today. It is as if the insurance industry was trying to cover the losses from a category 5 hurricane that flattened every house in Florida. The financial system is being overwhelmed and the more fragile parts of it are beginning to fail, as financial firms lose their reserves and their capital. By one estimate, already out of date as this is being written, financial firms have already lost over \$400 billion of capital. Some, like Lehman Brothers, will lose it all and go under, and all firms are cutting back on their risk exposure in order to preserve capital, in essence partially disconnecting themselves from the system.

Reduced capital translates directly into less ability to bear risk. Even if new losses stopped coming from the real economy, the capacity of the financial system as a conduit of credit has already been seriously diminished. Loans have become harder to get, or impossible for less creditworthy borrowers.

If the system itself remains intact, new capital can come in. Capital-depleted financial firms will sell themselves in part or in entirety to new investors, witness Bank of America's purchase of Merrill Lynch and Warren Buffet's purchase of a portion of Goldman Sachs. This would preserve the financial system, albeit under new ownership. But until things settle down, new investors will be very wary of risking their capital in a way that exposes them to the major losses that are still being generated in the real sector.

If we allow significant portions of the financial system to break under the strain, the total loss to the real economy will become much worse. When the connective piping is destroyed, the whole financial system loses some of its ability to provide credit to borrowers and attractive returns at low risk to savers. The cost of borrowing and the risk of lending would both increase, which would hurt all of us. We should try to avoid this if at all possible by keeping financial firms that lose their capital afloat in some way. The Federal Reserve and the Treasury deserve a lot of credit for handling the insolvency of major securities firms without breaking them during this period.

It may sound like just a theoretical argument that we can seriously damage the real economy if we let financial firms go bankrupt when the risks they took on turn into bigger losses than they can handle. But we have a strong historical precedent to look at. Following the stock market crash of 1929 and several unfavorable events in the real economy, the U.S. financial system was in severe disarray. At the time it was widely believed that what was needed was to let badly managed banks that had taken too much risk go bust. By 1933, roughly one third of the banks in the country had failed, and the country had fallen into the Great Depression. Most economists now feel that allowing such a large portion of the financial system to collapse was one of the major reasons the Depression of the 1930s was so deep and lasted so long. Luckily, Fed Chairman Ben Bernanke spent much of his career as an academic economist studying the Great Depression, and he is not about to let us repeat that mistake today.

What Should Be Done to Defuse the Crisis?

Taking a broad perspective also gives us some insight into the likely effect of plans to alleviate the crisis. Until mid-September, the Fed and the Treasury concentrated on providing liquidity to the system and managing the insolvency of major firms like Bear Stearns, AIG, and especially Fannie Mae and Freddie Mac, in such a way as to minimize the damage to the financial system. Massive injections of liquidity by the Fed and other countries' central banks have been undertaken to stimulate lending, because values of mortgage-related securities have become extremely uncertain, so lenders who make the short term loans that the securities industry depends on to finance its business do not want to accept them as collateral. And no one wants to lend to a firm that might be teetering on the brink of bankruptcy.

The bailouts have been necessary to keep the financial system from crashing. But they can not solve the problems in the long run. The financial piping is overstrained and the piecemeal approach is like a plumber running around to shore up one leaky spot after another wherever the risk of failure appears to be the greatest.

The \$700 billion bailout plan just agreed to in Washington is a much more ambitious and comprehensive effort. Exactly how it will work is not settled yet, but its main feature is for the Federal government to stabilize the market for mortgage-backed securities by offering to buy them at a fixed price. These securities have become nearly impossible to sell, because the market for them has been in free fall, but also nearly impossible to hold, because no one wants to accept them as collateral and provide the short term financing needed to carry them. The hope is that once a floor value is set for these difficult securities, the financial firms will be willing to resume trading them at reasonable prices and everything will settle down.

Naturally, everyone hopes the plan will stanch the bleeding, but it is unlikely to be a full solution because it fails to deal with two major issues. First, the losses that have already been taken have severely depleted the capital available to the financial system. Even if things calm down immediately, we will not go back to "business as usual" in the credit markets until the industry is recapitalized.

Second, and more importantly, it does not deal with the source of the problem, which lies in the real sector of the economy. Addressing the symptoms of the crisis by supporting the market prices of existing mortgage-backed securities does not alter the dynamics of default and foreclosure in the real economy. The Treasury's plan would relieve some of the pressure because the toxic securities where the largest losses will end up would be owned by the Federal government. This would help to limit further capital depletion in the financial system. But as long as large numbers of homeowners are finding themselves unable to pay their mortgages, lenders are foreclosing and trying to sell the houses into a market that has largely collapsed because there are too many other houses for sale, and the few potential buyers are having a hard time getting mortgages because credit has dried up, the losses and extreme uncertainty will continue and the financial system will remain under more strain than it can handle.

The crisis is caused by losses in the real economy that are too large to be passed through the financial system. Looking at the system as a whole it is clear that a way to stop the strain immediately would be to disconnect the financial sector from the real sector risk. The following is a simple sketch of how that might be done. It is not meant to be a complete plan, by any means, but rather a basic approach that the preceding discussion should make clear would work.

Much of the problem for the financial system stems from extreme uncertainty, not (yet) from actual default losses. Homeowners are financially strapped and some of them will default, but it is very hard to predict how many. Once a default occurs, it is very hard to predict how much will be recovered in a foreclosure, given the weakness in the housing market. Because it is so hard to predict the cash flows coming from the underlying mortgage loans, the market doesn't know how to value the mortgage-backed securities that have been created from those loans. Defaults have been running much higher than was expected and many of the specialized mortgage-backed derivatives that were designed to bear the first losses from defaults have been wiped out. Further defaults will impact securities higher up the chain, and no one can be sure how high the damage will rise. That uncertainty is affecting even the very senior securities. They will almost certainly pay off exactly what was promised, but their prices in the market today do not reflect that likelihood.

Suppose the Federal government announced that as of today, it would take over the monthly payments on any outstanding mortgage loan and would make no unplanned prepayment of principal. The monthly cash flows from every mortgage loan in the U.S. would immediately become fixed and fully known to the market, and as dependable as the coupon payments on Treasury bonds. Mortgage-backed securities, even the most toxic, would suddenly have absolutely predictable cash flows because the government would be bearing the default and prepayment risks. Their prices in the financial markets would become about as stable as prices for other Treasury securities.

Stabilizing the cash flows from mortgage loans into the financial markets would resolve the financial crisis, independent of what losses might be occurring in the real sector. The government would also be in a better position to limit the ongoing damage to the real economy from foreclosures and forced sales of properties into a depressed market.

In taking over the homeowner's liability to meet his mortgage payments, the government would be assuming the role of the homeowner vis-à-vis the mortgage lender. In collecting the monthly payments from the homeowner, the government would also be taking the place of the original mortgage lender vis-à-vis the borrower. The mortgage liability would not be forgiven, it would become a debt the homeowner owes to the government.

A homeowner who was current with his mortgage and paying on time would simply make the monthly mortgage payment to the government and the government would pay the lender.

If the homeowner was financially unable to make the required payments, the loan terms could be renegotiated. This would not have to involve forgiveness of the indebtedness for the plan to work. Payment terms could be restructured to be more manageable for the borrower without changing the total loan value. For example, the monthly payment amount could be reduced in the present to what the borrower could actually pay, but set to increase gradually in the future as economic growth raises overall income levels.

If renegotiation of mortgage terms to something the homeowner could afford proved impossible, it would mean that he did not actually have the financial capacity to purchase the house. At this point, the government could take over the ownership of the property (simply by continuing to pay the mortgage on it) and convert it into a rental unit. The homeowner's required monthly payment would then go down to the level of a normal rent for that house and locality.

This kind of financial arrangement would substantially reduce the number of foreclosures, evictions of families from their homes, and forced sales, with the attendant loss of value to the lender and the spillover damage to neighborhoods and communities. Losses in the real sector would drop, which would further reduce the stress on the financial system. The overall cost to the government of shoring up the financial system would be substantially lower than under a plan that did not address the ongoing losses in the real sector of the economy.

On the crucial question of how much such a large program would cost the taxpayers, in the end that would depend on how many new defaults there were, but it could be surprisingly little, considering the magnitude of the problem. In the unlikely scenario that no further defaults occurred once the program was in place, the government would simply be collecting monthly mortgage payments from homeowners and passing them through to the original mortgage lenders. This would be yet another zero-sum game contract with no gain or loss to the government at all. But realistically, we are in the current situation because a large number of homeowners can not continue making their mortgage payments at the current rates. If a mortgage were restructured without reducing the total loan value, so that the homeowner was able to pay the new amount, again there would be no economic loss. There would be a need for interim financing from the government, because cash outflow at the original mortgage rate would exceed cash inflow at the new level over the short run. But such financing would just amount to a bridge loan, that would be repaid over time with no overall loss.

There would begin to be a cost to the government only in the case where the homeowner could not even make the reduced payments on a restructured loan, and the house was turned into a rental property. The rental income would cover a portion of the government's ongoing payments to the mortgage lender, but not all. Because those payments include amortization of the loan principal, the government would be building up equity in the house over time. But the government should not be in the business of being a landlord over the long term, so those houses would eventually be sold when the housing market had stabilized enough that it was safe to do so. At that point there would be a loss if the sale of the house did not bring in enough to pay off the balance on the original mortgage. It is not possible to know at this point how much that would amount

to in dollars (there might even be a profit), and the answer would depend a lot on the extent to which the program had allowed house prices to stabilize at a reasonable level.

Concluding Comments

I have suggested a different perspective on the current financial crisis based on thinking about the financial system functions as a consolidated system. The key insight that allows us to take that perspective is that every financial instrument represents a contract with two sides, that functions as a zero-sum game. The whole financial system consists of a vast number and diversity of such contracts, but they all share this property, so we can aggregate them and think about the system as a single zero-sum entity without having to know about all of the internal details. Following this reasoning showed how the government could stabilize the financial system and also begin to deal effectively with the source of the problems in the housing sector. By operating on the source of the risk, a program like this would complement the Treasury's plan. It would reduce the market's enormous uncertainty about the value of mortgage-backed securities and the banks and financial firms that own them, which is stifling credit, and it would reduce the amount the Treasury might lose on the securities it buys in the bailout.

Here are a few more insights with regard to the issues that are currently being debated that we can draw from the "view from 20,000 feet up".

Even the most intricate financial derivatives are a zero-sum game. This means that it is not possible for a firm to lose \$1 billion on them without that \$1 billion showing up as a gain to the parties on the other side of those contracts. Lehman Brothers may have taken a big hit on credit default swaps, but this saved Lehman's counterparties from taking that hit themselves. Looking at the losses without considering the corresponding gains ignores half (the good half) of the full story.

Risk, and losses from that risk, arise in the real economy and must be borne by someone. The financial system does not create risk, it just distributes it. This means that if we were to decide, as a regulatory measure, that "toxic waste" mortgage-backed securities should be banned, we are inherently also deciding that other mortgage-backed securities have to become more risky, because they would have to take back the risk that had previously been transferred to the toxic ones.

The financial system will remain under extreme pressure as long as new losses are being generated in the real economy. Moreover, the losses that have already depleted the capital available to the financial system will reduce its ability to channel credit from investors to borrowers until more capital flows in.

Most important: The nation is angry. We can see, in retrospect, that excessive risks were taken, excessive compensation was paid to those who took those risks, people took out mortgages and bought houses they could not afford, and there is much blame to go around for the mess we are now in. But we mustn't allow an understandable desire not to let "greedy speculators" off the hook distract us from dealing seriously with the crisis. If

we let portions of the financial system break down through misunderstanding of how it interacts with the real economy, we will all pay a heavy price. And that price will be on top of the losses from the real sector that will continue anyway.