

THE FINANCIAL CRISIS OF 2007/2008 AND ITS MACRO-ECONOMIC CONSEQUENCES

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Information and incentive problems played important roles in the financial market scandals of the late 90s (exemplified by Enron/Worldcom) and in the financial crisis of 2007/2008. In my book *Roaring Nineties*, I provide an interpretation of the market scandals of the late nineties and early years of this century. Here, I want to provide a similar interpretation of the 2007/2008 crisis and a critique of the policy responses. The analysis here is motivated in part by observations of a large number of banking crises, especially in developing countries. In many ways, this financial crisis has similarities to these earlier crises, though certain aspects of the resolution are markedly different.

THE SOURCES OF THE PROBLEM

Some of the same problems that had contributed to the earlier problems were at play here. There were incentives for providing misleading information and conflicts of interest. Two additional elements were present: incentives for excessive risk taking and fraudulent behavior (a problem that played an important role in the S & L debacle). Perhaps more important though than these perverse incentives was a failure in modeling: a failure to understand the economics of securitization, a failure to understand systemic risk, and a failure to estimate well small probability events.

Incentive Problems

Executive compensation systems

Executive compensation schemes (combined with bank accounting regulations) encouraged the provision of misleading information—booking income “above the line,” while retaining liabilities off the balance sheet. Executives that are paid with stock options have an incentive to increase the market value of shares, and this may be more easily done by increasing reported income than by increasing true profits. Though Sarbanes-Oxley fixed some of the problems that were uncovered in the Enron and related scandals, it did nothing about stock options. With stock options not being expensed, shareholders often were not fully apprised of their cost. This provides strong incentives to pay exorbitant compensation through stock options. But the use of stock options encourages bad accounting practices.

In addition, stock options—where executives only participate in the gains, but not the losses—and even more so, analogous bonus schemes prevalent in financial markets, provide strong incentives for excessive risk taking. These might garner more profits in the short term, thereby increases compensation; but subsequent losses were borne by others. In a sense, they were designed to encourage risk taking. The problem is that they encouraged excessive risk taking.

Accounting frameworks exacerbated these problems. Banks could record profits today (and executive enjoy compensation related to those profits), but the potential liabilities were placed off the balance sheet.¹

Incentives for accounting firms

The Enron/Worldcom scandal brought to the fore long recognized incentive problems with accounting (auditing) firms, and their clear conflicts of interest. Hired by the CEO's, and with much of their pay related to consulting services, they had an incentive to please the CEO's—to improve accounts that overstated profits, which led to higher share value, and greater CEO compensation. Sarbanes Oxley took important steps to improve matters—the accounting firms were limited in providing non-accounting services, and they were hired by the audit committees of corporate boards. Yet, few thought that this would fully resolve the problems. Boards, including audit committees, are still often beholden to the CEO, and typically see the world through lens provided by the CEO. Accounting firms still have an incentive to please the CEO and the companies that hire them.

This may provide part of the reason that the accounting firms did not do the job that one might have hoped in exposing off-balance sheet risks.

Securitization

Recent years have seen increasing reliance on markets, including securitization, and a decreasing reliance on banks for the provision of credit. Much of the attention has focused on the greater ability of markets to diversify risk. Some have argued that markets, by gathering information from more diversified sources, may be informationally more efficient. But more than fifteen years ago,² we questioned this move to move to securitization, and in some ways was remarkably prescient concerning financial crisis of 2007-2008. Securitization creates new information asymmetries—banks have an incentive to make sure that those to whom they issue mortgages can repay them, and to monitor behavior to make sure that they do (or that the probability that they do is high.) Under securitization, the originator only has an incentive to produce pieces of paper that it can pass off to others.

(At the time, I did not emphasize enough another problem with securitization—it may make renegotiation more difficult, when problems arise. It is impossible to anticipate fully all contingencies, and to specify what is to be done in each in the loan contract.

¹ All of this discussion emphasizes the importance of problems of corporate governance, the distinction between management (control) and ownership, to which the economics of information called attention.

² J. E. Stiglitz, “Banks versus Markets as Mechanisms for Allocating and Coordinating Investment,” in J.A. Roumasset and S. Barr (eds.), *The Economics of Cooperation: East Asian Development and the Case for Pro-Market Intervention* (Boulder: Westview Press, 1992) 15-38

When the borrower cannot meet his repayments, it may be mutually beneficial to renegotiate—the costs are lower than default (foreclosure on a mortgage). Yet such renegotiation may be more difficult under securitization, when there are many creditors, whose interests and beliefs differ. Some may believe that by bargaining hard, they can get more on average, even if it means that some of the loans will fall into default. This is especially the case when those who assume the risk do not trust fully those who manage the loan to act in their behalf; they may worry that their incentives (related to management fees) are not fully in accord with the creditors', and so may impose restrictions on renegotiations. Moreover, the banks may have a richer “information” context with which to evaluate the problems; they can more easily ascertain whether the default is a “strategic default” (where the borrower is simply trying to have his debt burden reduced), and whether a loan restructuring—deferring repayments—will allow the borrower eventually to repay, or whether it will simply mean that the cumulative loss will be greater. Especially in the litigious American context, renegotiation has proven difficult, because any creditor has an incentive to sue those responsible for renegotiating (saying they could have done a better job.)

The securitization of the sub-prime mortgages has actually created a series of new problems in information asymmetries: the mortgages were bought by investment banks, repackaged, with parts sold off to other investment banks and to pension funds and others; part retained on their own balance sheet. In retrospect, it was clear that not even those creating the products were fully aware of the risks. But the complexity of the products made it increasingly difficult for those at each successive stage of the processing and reprocessing to evaluate what was going on.

Rating agency incentives

The rating agencies had been widely berated for their failures in the 1997 global financial crisis. They had underrated the risks in East Asia; but as they became so large that they could no longer be ignored, their sudden downgrading of these assets forced them to be sold by pension funds and other fiduciaries, and exacerbated the problem. They had clearly contributed to financial market instability. It seemed strange, given this record, that Basle II put such stress on rating agencies³. In the 2007/2008 subprime mortgage crisis, the rating agencies again failed—and are, in my judgment correctly, viewed as a critical part of the problem.

Part of the problem is again flawed incentives: Rating agencies—paid by those who they were rating—had an incentive to give them “good grades.”⁴ They had an incentive to believe in the ability of the investment banks to engage in financial alchemy, to convert F

³ Though this is no longer the case in the Internal Ratings Based approach adopted by the U.S.

⁴ One might argue that this would have been offset by their desire to maintain their reputation. The short term focus we have emphasized that follows from the market imperfections to which we have called attention meant that the concern for loss of reputation may not have been given the weight that it otherwise would. Moreover, when all are engaging in similar practices, there is little risk: where else can they turn. In effect, they are rewarded, and punished, on the basis of relative performance. (See Nalebuff and Stiglitz, 1983a, b)

rated assets into the kinds of A rated products that fiduciaries could hold in their portfolios. Not unlike medieval alchemists who believed there was money to be made by converting base metals like lead into gold, there was plenty of money to be made—and shared by all involved in the process—in the conversion of these assets.

New conflicts of interest: repeal of Glass Steagall

During the discussion of the repeal, critics had worried about conflicts of interest. Advocates had said, “Trust us.” Besides, they said, we will construct Chinese walls, to make sure that there are not abuses. Critics were (as it turned out, rightly so) skeptical; and raised the question, if effective Chinese walls were constructed, where were the economies of scope that provided the rationale for the mergers?

The elimination of the barriers between investment and commercial banking provided more scope for conflicts of interest, amply demonstrated by the World Com/Enron scandals, e.g. the commercial division lending to firms that the investment division had issued IPO’s, in order to make them seem more “viable.”⁵

These conflicts of interests may have not been at the center of the problem, but they clearly played a role. So too in the 2007/2008 crisis. Indeed, the closer interplay between investment banks and commercial banks almost surely contributed to the necessity of the Fed bail-out of Bear Stearns. It was not just a few investors’ wealth that was at stake, should Bear Stearns fail, but the entire financial system.

There have been other effects of the integration of investment and commercial banks that almost surely played a role in the debacle. The culture of conservatism that had traditionally dominated commercial banking came into clash with the speculative drive of the investment banks, and it was the latter culture that dominated.⁶

The Bernanke-Greenspan Put and Moral Hazard

Economists have always been aware of the distorted incentives that bail-outs provide. If a bank gambles (e.g. by making risky loans), and wins, the shareholders keep the gains. If a bank gambles and loses, there is a limit to the losses. The government picks up the pieces.⁷ That is one of the reasons for the need for close supervision of banks; just like a

⁵ These conflicts of interest played a role in some of the worst scandals in the late 90s

⁶ Further problems may have been raised by differences in accounting practices and regulations.

⁷ This gives rise to convex pay-offs, which in turn give rise to excessive risk taking. The problems arise whenever there is limited liability. Due diligence on the part of those providing capital to the enterprise is supposed to provide at least some check against abuses. Here, deposit insurance reduces, if it does not eliminate, the extent of the check. Those who provide capital to the bank can ignore the risks. This has led some to criticize deposit insurance. But as the Bear Stearns and LTCM bail-outs illustrates, governments will bail out any financial institution whose bankruptcy can give rise to a systemic risk. The major players are simply too large to fail, and they, and those who provide them credit, know it. As Jerry Caprio once put it, there are two kinds of countries, those that have deposit insurance and know it, and those who have deposit insurance and don’t know it. Moreover, monitoring banks to ensure that they are in a position to

company providing fire insurance needs to make sure that those insured have sprinklers, to reduce the extent of losses, so too the government, which either implicitly or explicitly is providing insurance, needs to make sure that banks are not engaging in excessive risk taking.

Bernanke has now extended the coverage of bail-outs (“lender of last resort”) to investment banks, exacerbating all the problems to which we have already called attention.

Though the adverse incentive effects of bail-outs are clear, it is not always so clear who benefits from them.⁸ The question is, what would have happened, were there not a bail-out? Who is better off? Who is worse off? Clearly, taxpayers are worse off: at the very least, they have assumed risks that would otherwise have been borne by others. The full answer depends in part, of course, on the terms of the bail-out. For instance, in the discussion below of the Bernanke bail-out of Bear Stearns, those who would have lost money if Bear Stearns had gone under are better off. Bear Stearns shareholders are better off than they would have been had it gone under. Those who had “bet” on Bear Stearns going under are worse off. Part of the reason that it is difficult to get a fully satisfactory answer to this question is that there is uncertainty about what would have happened if there had not been a bail-out. If it would have led to a cascade of other failures, then all of these who otherwise would have gone under have benefitted.⁹

Incentives—and opportunities—for fraud

It should have been obvious to almost anyone involved—from those originating the mortgages, to those repackaging and securitizing them, to the rating agencies, and to the regulators—that there was something very wrong going on. Some of the mortgages required no documentation, and no down payments. With some of the appraisal companies owned by the mortgage originating companies, there were clear conflicts of interest. A structure was in place for fraudulent behavior—for loans greater than the value of the house.¹⁰ And it is clear that such fraudulent behavior did occur. Incentives matter, and if there are perverse incentives, there are perverse outcomes.

repay their deposits is a public good; it is inefficient to rely on each depositor to do its own monitoring. The credit rating agencies’ recent performance makes clear the difficulties of relying on the private sector for the risk assessment. There are simply too many conflicts of interest. See also J. E. Stiglitz, “The Role of the State in Financial Markets,” *Proceeding of the World Bank Conference on Development Economics 1993*, Washington, D.C.: World Bank, pp. 41-46.

⁸ A point that was made forcefully in the IMF bail-outs in the late nineties: there, it was clear that while the bail-outs were typically described as bail-outs of the country, they were more accurately described as bail-outs for the lenders.

⁹ In the Mexican bail-out, critics suggest that the main beneficiaries were Wall Street investors who held the bonds.

¹⁰ This was especially true given the incentive structures. For instance, mortgage brokers originating the mortgages were paid on a commission. They faced no penalties in the event of a foreclosure. They had an incentive to oversell, to explain how the markets were going up and would continue to go up, how the more one borrowed the more one made, how there would be no problem in obtaining additional finance when interest rates increased under the reset provisions. In some cases they may have been deliberately

Both the regulators and those buying these securities should have been suspect: a 100% mortgage is an option—if the price of the house goes up, the owner keeps the difference, if it goes down, he walks away. Providing such mortgages is equivalent to giving away money. But banks are not traditionally in the business of giving away money, especially to poor people. How can one make money by giving away money? The answer was simple: they were in the business of creating pieces of paper that they could pass on to others. As the expression goes, a fool is borne every moment, enough to create a market: especially when these fools are aided and abetted by wisemen, with strong reputations, rating agencies and long established investment banks.

Not all of the mortgages provided, in effect, 100% financing.¹¹ This provided another incentive for bad behavior. Much has been written in recent years about the amount of money that lies at the bottom of the pyramid, and America's financial institutions were determined to extract as much of that money out as fast as they could. Many put their life savings into the purchase of their homes—money that in effect went to pay commissions to the mortgage brokers and others who benefitted from the housing boom so long as people continued to finance and refinance their homes. They walked away with their commissions, no matter what happened to housing prices; it was the poor that were left to bear the risk.

Many recognized that there was predatory lending going on. Not surprisingly, the predation was especially strong among those who were financially not well educated. There were attempts to stop this predatory behavior, but lobbyists for those who were doing well by exploiting these groups prevailed.

Modeling Problems

Still, many of the mistakes of the financial markets (including the banks and rating agencies) are attributable not to bad incentives, but to bad models—mistakes in modeling that were and should have been obvious before the collapse. (To be sure, bad incentives may have encouraged them to adopt faulty models.) They failed to understand the perverse, predictable and predicted, consequences of the incentive structures that they had created (described above).

Failing to understand diversification

misleading those who they were trying to persuade to borrow; in other cases, they had deceived themselves. The situation was conducive to corruption: enough money to be split among the brokers, the appraisers, the borrowers that all could gain from deception.

¹¹ Some of the mortgages did not initially provide 100% financing, but since the initial payments were less than the full interest that should have been due, they represented negative amortization, and the amount owed became greater than the value of the house.

Market participants systematically ignored systemic risk. They thought that securities consisting of a large number of mortgages would have a small probability of losing more than, say, 10% of their market value. Based on recent history, what was the probability of large numbers going into default at the same time?

They failed to realize that diversification has only limited value when risks are correlated; a fall in the price of housing, a rise in the interest rate, and an economic downturn all could give rise to correlated risk—an increase in the default rate. The 2007/2008 subprime mortgage crisis was not the first time that financial markets seemed to have underestimated both systemic risk and unlikely events. Once in a century problems seemed to be happening every ten years.

Intellectual incoherence

It should have been obvious that there was something wrong with their reasoning. They argued that the new financial instruments were fundamentally changing the structure of the economy—it was these fundamental changes which presumably justified their huge compensation. But at the same time, they were using data from before the introduction of these new instruments to estimate the parameters of their models, including the likelihood of default. If it were true that they had opened up a new era, surely these parameters would have changed!

Failing to understand systemic risk—a critical failure of the Basle II framework

Basle II required banks to manage their own risks—as if that is what they would not have done on their own. It presumed that the regulators could monitor complicated risk management systems of banks, or at least that the rating agencies could assess risk. It is now clear that banks did not know how to manage risks and that the rating agencies did not know how to assess risk (or did not have the incentives to do it well.)

But there was a more fundamental flaw with the Basle II framework. Banks obviously have incentives to manage their risks—isn't that supposed to be part of their basic business model? Regulators need to focus on those areas where individual private risk management might not accord with managing social or societal risks well.

One obvious example is provided by what happened (and what had happened earlier, in 1987): if all banks are using similar risk management systems, they may all try to sell certain assets in particular contingencies, in which case they can't; prices fall in ways that were not anticipated. Using similar risk management systems can give rise to correlated risks, with far larger than normal price movements.

Banks have been criticized for using the same (or similar) models. That is not really the key issue: indeed, if they all the right model, based on rational expectations, then they would have to be using the same model.¹² The problem was that they were all using

¹² Of course, those with different assets and liabilities will face different risks, and the “models” may accordingly pay more attention to the relevant risks.

similar wrong models. They were using models that were not consistent with rational expectations; they were all using models that were such that, if they all used that model, the outcome could not have been consistent with the models themselves.

There was a role for the regulator: at the very least, it could have checked the consistency of the models. Each firm may have been unwilling to share its model with other firms—they presumably believed that their ability to manage risk well may have given them a competitive advantage over other banks. But they can be required to share their model with the regulator, who can assess the systemic implications, and the consistency of the models with systemic behavior.

More generally, it was a major failing of Basle II not to recognize that there are systemic externalities—presumably one of the reasons for regulation in the first place.

Detecting Ponzi schemes

In each of the crises, little thought about the economic situation should have revealed that what was going on was not sustainable.

Behind the scenes were two classic problems: excessive leverage (typically in a non-transparent form) and a pyramid scheme. Everything might have worked well if house prices had continued to rise. Those who borrowed beyond their ability to pay would have made sufficiently large capital gains that they could have repaid what was owed. Those who lent without due diligence would have done just as well as those who had.

With money loans having in effect negative amortization, the borrowers owed more at the end of the period than at the beginning. Some expressed concern about what would happen when they had to pay the full interest due (as in most of the loans, after an initial period of “teaser rates.”) They were told, not to worry: they would easily refinance the loan. They would then even be able to spend some of the capital gains, through mortgage equity withdrawals.

But it should again have been obvious that it was unlikely that prices could have continued to rise, even without an increase in the interest rate. Real incomes of most Americans have been declining. Yet median house prices (even adjusting for overall inflation) were increasing, and dramatically so. There was an obvious limit to the amount that can be paid for housing. Anybody looking carefully at housing prices saw that what was going on was not sustainable. How could prices (adjusted for overall inflation) continue to rise, as real incomes of most Americans, and especially those at the bottom, continued to fall?

Everyone in the system should have realized that they were engaged in a classical pyramid scheme.

The failure of the financial system to perform its essential functions: what were they doing? Regulatory arbitrage?

In short, it is hard to reconcile what happened in that episode (as in the earlier ones) with any model of “rational” behavior. But whether rational or irrational, failures in financial markets in the late 90s and in 2007/2008 have highlighted the importance of information imperfections. In each instance, the results were clear: the financial system failed to perform the functions which it is supposed to perform, allocating capital efficiently and managing risk. In the late 90s, there was massive excessive investment, say, in fiber optics; in the first decade of this century, there was massive excessive investment in housing. And while new products were created which were supposed to facilitate the management of risk, they actually created risk. They were so non-transparent that when problems began to surface, no bank knew what its own balance sheet looked like, let alone that of a bank to whom it might lend. No wonder then that there was a freezing of the financial system.

While they were creating risks with their new products, they were not creating the products that would help manage the socially important risks that needed to be managed. They were (for the most part) not creating risk products that were tailored to the needs of those that needed to have risk managed. (Their failure to manage their own risks suggests that they might not have had the competence to do so, even if they had wanted to.) In many cases, funds would buy the new derivative products as part of portfolios. Sub-prime mortgages and other assets were being sliced and diced, and then recombined, and the resulting products would then be mixed with other similarly artificially constructed products—and no one could easily ascertain the risk properties of the resulting portfolio. As I suggest below, they were not really managing risk; they were engaged in regulatory arbitrage.

There were real social needs for risk management, evidenced by the fact that millions of Americans may lose their homes.¹³ The new mortgages increased the risk borne by poor homeowners of interest rate fluctuations and credit market conditions. This was especially true of those mortgages with reset provisions or balloon payments, which were often sold on the presumption that the individuals could refinance their mortgages. There are alternative mortgages that would have shifted more of the risk to the market or made it easier for individuals to manage these risks (e.g. mortgages with variable maturities but fixed payments.)

One hypothesis about what was really going on—beyond a fancier and hard to detect pyramid scheme, or the newest form of accounting deception, to replace those that had been exposed in the Enron/World Com scandals—is that this was a fancy version of regulatory arbitrage. The problem facing financial markets was how to place these high risk sub-prime mortgages that were being created into sources of funding, many of which were highly regulated (such as pension funds). These are regulated for a good reason:

¹³ The fact that developing countries continue to have bear the brunt of exchange rate and interest rate fluctuations is another example of the financial markets’ failure to transfer risk from those less able to bear it to those more able to do so. See J. E. Stiglitz, *Making Globalization Work*, especially Chapter .

these institutions are fiduciaries, entrusting to make sure that funds are available for the purposes intended, financing individuals' retirement. They are, accordingly, not allowed to speculate on highly risky securities. The bonds they invest in must have a high rating. These regulations give rise to the demand for financial alchemy. If poorly rated sub-prime mortgages could somehow be converted into an asset with a high enough rating to be placed in pension funds and other fiduciaries, there was money to be made: if these assets could yield a slightly higher return than other comparably rated bonds, then there was an insatiable demand. The difference between the return on the low rated sub-prime mortgage and the AAA products created by financial alchemy provided billions of dollars to be divided among all those participating in the scam—from those originating the mortgages (both the companies and those who worked for them), to those who did the repackaging, to the rating agencies.

Someone, everyone had forgotten that oldest of economic adages: there is no such thing as a free lunch. Evidently, in their minds, money had been left on the table of decades, and only the power of modern finance had found it. Where were the billions of dollars of true welfare gains that corresponded to the billions of dollars of seeming profits, bonuses, and commissions coming from? Never mind, if no one could find a good answer.

There was, of course, a simple answer, provided by the capital gains based pyramid scheme—some were cashing in on the gains, leaving the future losses to others. At the same time, it became clear that financial prowess had created not only new vehicles for what might be called systemic deception, but had exposed a deeper problem within the capitalist system. It was difficult at best to tell who was managing assets well, who was taking a long run gamble that would pay off well to the fund manager, but likely at the expense of those whose funds he was managing. One could create assets that had a low probability of a large loss. Assume, by way of example, that an asset had a 95% probability of a return that was above normal by 1%—in conventional terms, “almost certain”—but a 5% probability of a loss of $x\%$. If $x > 20\%$, the expected return to this risk asset is actually less than a safe asset. But on average, it will take twenty years before finding out the value of x . It will be 20 years before one finds out whether the 1% excess return is enough to compensate for the loss. But, of course, the hedge fund managers are paid not on the basis of 20 year performances; they walk away with the positive returns, regardless of the loss that occurs in that 20th year.

RESPONDING TO THE CRISIS

The information-theoretic models provide considerable insight into what should have been done, and into what the deficiencies in what was done. We divide the analysis into three parts: (a) Financial rescue; (b) monetary stimulation; and (c) fiscal policy.

Financial rescue

Given the magnitude of defaults on the sub-prime mortgages, it is not surprising that these problems became translated into defaults elsewhere in the system. To be sure, if the risks had been fully diversified, rather than leveraged, it would have been easy for the system to absorb them: the defaults were a small fraction of the financial wealth of the global system. But given the lack of transparency, it is especially not a surprise that there was a “run” on a bank, with market participants pulling their money out (not rolling over loans.) Even if they would have eventually fully recovered their assets, the risk of having their money tied up for an extended period of litigation, at a time when credit was tight, was simply not worth the slightly higher returns that they might receive.

Greenwald and Stiglitz [] and Gellegati et al have emphasized the importance of credit interlinkages, and how defaults in one part of the system can lead to defaults elsewhere. It is easy to construct models of bankruptcy avalanches. The fear was that a default by Bear Stearns would lead to a series of other defaults, and a run on other banks. Indeed, even after Bear Stearns was bailed out (through a Fed financed acquisition by J.P. Morgan) so great was the fear of further defaults that the Fed extended its lender of last resort facility to investment banks. Even most critics of the Fed agreed that, at that point, it had no choice. It may have failed in providing an adequate regulatory structure; it almost surely failed in acting too late. But given the risks at that moment, a bail-out was inevitable.

The criticism is the form of the bail-out, which entailed potentially huge transfers of wealth to J.P. Morgan and large transfers to Bear Stearns shareholders, while taxpayers were put at risk for large amounts without any compensation. If taken as a precedent, it expanded the scope of moral hazard, rewarding those who had engaged in excessively risky behavior and had been already richly compensated. The defense that something had to be done quickly was hardly a defense: that there were potential problems had long been recognized, and it is hard to believe that contingency plans had not been thought through. Wall Street wanted a bail-out, and Wall Street got a bail-out; perhaps not as extensive as they had hoped, but still on terms that were unconscionable, in a manner that was not transparent, and that seemingly paid little attention to the large distributions of wealth that were generated. Conflicts of interest (bordering on corruption) abounded.¹⁴

The bail-out took the form of a non-recourse loan from the Fed to J.P. Morgan to acquire Bear Stearns (originally for \$250 million, ck, later upped to \$1.2 billion ck.) The Fed

¹⁴ Similar concerns of corporate corruption had been noted in the publicly orchestrated by privately financed LTCM bail-out. Shareholder money was being used to in part bail out personal investments by corporate officials.

gave \$30 billion to J.P. Morgan, and got what was supposed to be an equivalent amount in collateral consisting of a mélange of assets, including sup-prime mortgages. No one is sure how they were priced. If the value of the assets falls below \$29 billion, J.P. Morgan absorbs the first billion of losses, but taxpayers are at risk for the remainder (and obviously, for the first billion, if J.P. Morgan itself were to go bankrupt.)

Non-recourse loans are, in effect, put options. If the value of the collateral goes below \$29 billion, J.P. Morgan has little incentive to pay back the loan. In discussing the risk, attention has focused on the probability of default, particularly important because no one is sure how they were priced in the first place, i.e. what probability of default was built into the pricing. But there is a second problem: interest rate risk. If interest rates rise, then the value of the assets declines. Some of these assets are 30 year mortgages, meaning that they are highly sensitive to long term interest rates. Providing a non-recourse loan even if the assets are currently correctly priced is like giving away an option, an option with a very high value. {see if you can calculate}.

Particularly irksome was that the government stood to lose large amounts of money (both on the credit risk and the interest rate risk), but there was no upside potential. Meanwhile, Bear Stearns shareholders walked away with \$1.2 billion, less than they would have liked, but still more than they should have, especially given their failure to manage risk appropriately.

There were many ways that the taxpayers could have been protected, and at least received some compensation. For instance, shareholder value could have been put into escrow, until it was clear that taxpayers' money was not at risk. The first \$1.25 of losses would be paid either by J.P. Morgan or by shareholders. J.P. Morgan could have been asked to pay a risk premium up front, and to pay the market value of the implicit put. If the collateral turned out to be more valuable than the value assigned to it, the government could have demanded a fraction of the excess.

Bailing out Bear Stearns also entailed large redistributions. Many had bet on Bear Stearns going into bankruptcy (in credit default swaps). Those that had bought insurance against this risk (bet that it would happen) were deprived of money that they otherwise would have received; those that provided the insurance received a windfall gain. This market is itself not very transparent, but allegedly among those who received large windfall gains were the big investment banks—including J.P. Morgan. (In defense of the bail-out, one could argue that the risk of a bail-out should have been priced into the insurance in the first place. Still, the fact that J.P. Morgan was, in part being bailed out should have played into the terms at which the bail-out occurred.)

The events subsequent to the bail-out evidenced many of the potential conflicts of interest. The CEO of Bear Stearns was hired by J.P. Morgan, at handsome compensation. Clearly, a promise (pay-off) of this kind could interfere with his ability to negotiate in the best interests of the shareholders. Shareholders had to vote on the acquisition. But it is easy to show that those who had sold insurance against the risk of Bear Stearns going

bankrupt had an incentive to buy shares, to ensure that the acquisition went through, even if shareholders as a whole might have thereby been disadvantaged.¹⁵

The bail-out orchestrated by the regulatory illustrates a problem common to discretionary regulatory policy, an issue that arose in the bail-out of LTCM, where not even public money was involved. The regulator has a variety of carrots and sticks for inducing cooperation. Lack of cooperation can induce tighter scrutiny; fuller cooperation can buy regulatory forbearance, now or in the future. In the case of LTCM, banks were induced to contribute funds to bail-out the hedge fund benefitting, not necessarily incidentally, many of the corporate executives of the same banks who were contributing money (another instance of the complex web of conflicts of interest.) Was participation in the bail-out in the best interests of the shareholders? The New York Fed believed it was in the interests of the system as a whole. But whether the individual banks agreed, and whether it was in the best interests of the individual participating bank, is another matter.

In the case at hand, this combined with lack of transparency to leave a high level of uncertainty: it does not appear that J.P. Morgan got a bad deal; on the contrary. But was it because it outsmarted the Fed? Because there were relatively few institutions able and willing to take over Bear Stearns, and the Fed wanted, at any cost, to avoid a collapse, and so, given exigencies of the moment, it could drive a hard bargain?

There were several alternative courses. One which the U.K. eventually took (though the delay in doing so may have cost it a great deal) is nationalization. (Whether the legal framework would have allowed the U.S. to do this may not be clear; but it was not clear whether the Bear Stearns bail-out was legal. Paul Volker, Fed Chair from 1979 to 1986 (ck, reference) has suggested that it is not.¹⁶)

It is curious that it has become acceptable for a foreign government, or, equivalently, a fund owned by a foreign government, to bail-out (or take over) a failing bank (as happened in the case of Merrill Lynch and Citibank), but there is still a reluctance to allow one's own government to do so. The standard rationale against governments running/nationalizing banks is ideological: governments shouldn't do it; the private sector is better at running banks and other such enterprises than the public sector. But the private sector has, in these instances, demonstrated its incompetence. The public purse is at risk. The government has a large stake in how the resolution is managed. Indeed, with

¹⁵ Assume, for instance, that if the company had gone into bankruptcy, it would have been worth \$400 million and (in the original offer) shareholders only got \$250 million. But bankruptcy might have exposed the providers of insurance to an additional risk of \$200. They gain more in *not paying out on their insurance* more than they lose in market value. They would vote for the acquisition, even if it was not in the interests of the shareholders as a whole. As Stiglitz [] and Grossman and Hart [] point out, the equilibrium may not be consistent with shareholder value maximization. A small shareholder who believes that the acquisition will go through (that those who will vote for acquisition are in a majority) will not pay more than \$2.50 a share, if there were a million shares. But, say, a bank (or even better, a consortium of banks) that had large outstanding liabilities if Bear Stearns goes bankrupt would be willing to pay more than \$2.50 a share to obtain controlling interest to ensure that the acquisition did go through. Of course, minority shareholders—that are not at risk if Bear Stearns goes bankrupt-- are left short changed.

¹⁶ reference

implicit or explicit deposit insurance, it has more at stake than anyone else. Yet it is difficult to provide incentives for any private firms that are compatible with the interests of the state. It is far better to have the government manage the resolution. (In the case of Bear Stearns, the public interest was even more complicated. There was a public interest in maintaining the integrity of the financial system. There were no formal liabilities, as in the case of deposit insurance. What was required may not have been clear. In the event, there was a huge transfer of wealth to J.P. Morgan to ensure that this was done.)

There is a rationale for encouraging foreign government bail-outs: the arms length bargaining ensures that the foreign government is not likely to be engaged in hidden transfers of wealth, as may have happened in the Bear Stearns bail-out, and as has happened in bail-outs in many countries. On the other side, one of the concerns of government ownership of banks is that resources get directed according to political, not economic objectives. This should presumably be more acceptable if it is one's own government's political agenda (though, as I have explained elsewhere¹⁷, if there are concerns about resources being used in ways that go counter to public interest, it is a sign of an inadequate regulatory framework—the problems could arise as well with domestic private ownership.)

There were still other alternatives: the government could have lent to Bear Stearns directly. This would have been more transparent. And it would have been easier to design a system of allowing the government to participate in the upside potential, as the government did when it helped engineer Chrysler's bail-out. (Still a third alternative, more akin to the Chrysler bail-out, would be providing a public guarantee to private funds, though—other than ideology—it is not clear why this is preferable to the direct provision of government funds.)

Again, in the instance, it may not have been consistent with the legal framework, though the Fed's announcement that, going forward, it stood willing to lend to other investment banks, suggested that it believed that it did have regulatory authority. The issue here is the design of the appropriate framework: it would seem desirable to give government the right to lend, in return for taking a share of the potential gain or at sufficiently high interest rates to compensate for the risk that the collateral was less than the value assigned.¹⁸¹⁹

Ownership is often defined as the residual claimant on the returns to an asset and residual control. Current banking frameworks leave the government as the residual holder of negative claims and, in effect, with considerable residual control rights—when things turn out badly, but not when they turn out well. They can run things once the patient gets

¹⁷ Tobin project paper

¹⁸ It is curious that those who believe in free markets are not only willing to accept a government financed bail-out, but demand it; while they argue for the virtues of market determined prices, in these circumstances, they seem to suggest that market prices undervalue assets.

¹⁹ J. E. Stiglitz and A. Weiss ["Credit Rationing in Markets with Imperfect Information," *American Economic Review*, 71(3), June 1981, pp. 393-410] explain why charging an interest rate high enough to compensate for the risk may have adverse incentive effects, so that more complicated financial instruments—or even nationalization--may have to be required.

to the hospital, but they pick up the hospital bills, and can do little (or at least not enough) to prevent the accidents that lead to hospitalization.²⁰ This seems neither efficient nor equitable; and in many countries, such policies have resulted in huge transfers of resources from the public to the private sector (e.g. in Mexico's banking crisis.)

Further comments on equity injections, capital adequacy standards, and forbearance

Typically, financial injections into the banking system occur before the actual meltdown, while the bank is viable, but has failed to meet its regulatory capital adequacy standards. Banks facing such a situation can be forced to comply. Typically, banks have found it difficult to raise the required capital. Part of the reason is (as here) the uncertainty concerning the value of the assets and liabilities—made even worse here because of the lack of transparency in off balance sheet accounting and the complexity of products. Part of the reason is that such problems are often associated with downturns, and there is a general scarcity of liquid funds for the bail-out. The current instance may be an exception, or may be a harbinger of a new world. The world is awash with liquidity—in fact excess liquidity is often blamed for the current problems; sovereign wealth funds have come to the rescue. In today's world of globalization, banks can turn to the global financial market. Funds may be scarce in the U.S., but there is a whole world to turn to. There may be another factor at play: the banks being bailed out are controlled by their managers. Their interests may not fully coincide with those of their shareholders. The managers may have been more willing to give up a greater share in the ownership of the bank to save the institution. On the other hand, the sovereign wealth funds may have been more willing to pay more than a typical risk averse buyer, focused on the actuarial value of the assets and their risk to obtain a large share in these iconic assets.

In the 1997 East Asian financial crisis, the IMF strongly urged government regulators to enforce strictly capital adequacy standards. I argued that such a policy could be counterproductive; if the banks couldn't raise additional capital, it would force a contraction of their loan portfolio, further deepening the economic downturns, and possibly even worsening balance sheets, contributing to a downward spiral. The IMF policy of no-forbearance was, in effect, instituting an automatic destabilizer into the economy.

One of the challenges in designing a regulatory regime based on capital adequacy standards is how to prevent this destabilizing behavior. One proposal is to introduce countercyclical standards, i.e. that automatically loosen the standards when the economy is weak, and tighten them when the economy is strong.

²⁰ In P. Orszag and J.E. Stiglitz, "Optimal Fire Departments: Evaluating Public Policy in the Face of Externalities," with Peter R. Orszag, The Brookings Institution, Jan. 4, 2002. <http://www.brookings.edu/views/papers/orszag/20020104.htm>, we explain the need for better regulation (accident prevention) in those instances (such as here) where, it is argued, that, when an accident occurs, there must be government action.

Another proposal is to use discretion. Most countries engage in discretion. Hopefully, the central bank can distinguish among the circumstances in which banks find themselves: is it an isolated bank that is facing a problem, in which case forbearance should not be engaged in; or is it systemic risk. (Of course, the government has to be careful—it can unwittingly encourage correlated behavior, which can increase systemic risk.) One of the critics of the IMF and the US Treasury in the East Asia crisis was its failure to recognize the possible desirability of discretionary forbearance. (The irony is that they worried that it would give rise to moral hazard—concerns that were evidently muted in the Bear Stearns bail-out.)²¹

Some urged government capital injections capital adequacy standards could be met, and a few countries took this course. Capital adequacy standards are supposed to serve two functions: they ensure that the bank has enough capital at risk that it does not take on excessive risk, and it provides a buffer, so that the government does not have to put up as much money should things turn out badly. When the government puts up money to meet the capital adequacy standards, it is doing little to protect taxpayers' money: if it puts the money in the form of equity, its money is now at risk even if the bank survives, but simply gets a low return. But more important is the fact that incentives are little affected: controlling shareholders care about their wealth, not the wealth of the government; what they have at risk is unchanged. Indeed, it can be shown that under some circumstances, incentives are adversely affected. The existence of capital adequacy standards lowers the franchise value of a firm (it is a constraint imposed on the firm, and therefore has to lower owners' expected discounted (utility of) future income), and dilutes existing shareholders claims on future franchise value. As a result, the bank may even engage in more risky behavior (at the expense of taxpayers.)²²

In the transition from Communism to the market economy, it became clear how government's control of the banking system (either directly through ownership of banks, or indirectly, through the granting of bank licenses and regulatory supervision) affected the wealth distribution: those, and only those, who had access to capital could buy the assets, typically at far below prices that represented fair market value. The question is, today, is Central Bank liquidity doing something similar, though admittedly on a far less

²¹ In addition, the objective function of the IMF and the individual countries may have differed markedly. The former may have been concerned with consequences for the *global* financial system, the latter focused more narrowly on consequences for the national financial system and economy.

²² See T. Helmann, K. Murdoch, and J. E. Stiglitz, "Liberalization, Moral Hazard in Banking and Prudential Regulation: Are Capital Requirements Enough?" *American Economic Review*, 90(1), March 2000, pp. 147-165; T. Helmann, K. Murdoch, and J. E. Stiglitz, "Franchise Value and the Dynamics of Financial Liberalization," in *Designing Financial Systems in Transition Economies; Strategies for Reform in Central and Eastern Europe*, Anna Meyendorff and Anjan Thakor (eds.), MIT Press, 2002, pp. 111-127. T. Helmann, K. Murdoch, and J. E. Stiglitz, "Financial Restraint and the Market Enhancing View, in *The Institutional Foundations of East Asian Economic Development*, Y. Hayami and M. Aoki (eds.), London: MacMillan, 1998, pp. 255-284; T. Helmann, K. Murdoch, and J. E. Stiglitz, "Financial Restraint: Toward a New Paradigm," in *The Role of Government in East Asian Economic Development*, M. Aoki, H. Kim, and M. Okuna-Fujiwara (eds.), Oxford: Clarendon Press, 1997, pp. 163-207; K. Murdock and J. E. Stiglitz, "The Effect of Financial Repression in an Economy with Positive Real Interest Rates: Theory and Evidence," August 1993.

grand scale. If the Central Bank lends money to Bank A, and Bank A lends money to Hedge Fund Alpha, and Hedge Fund Alpha uses some of the money to buy shares in Bank B, and at the same time, the Central Bank lends money to Bank B, and Bank B lends money to Hedge Fund Beta, and Hedge Fund Beta uses some of the money to buy shares in Bank A, we can recapitalize both Bank A and Bank B. It is a private sector recapitalization—of course all funded by the government, but with a set of smoke and mirrors so confusing that no one (outside a few skeptic economists—and who pays attention to them anyway) can figure out what is going on. The wonderful thing about this charade is that it perpetuates the longstanding dogma: privatize assets while socializing risk. If the banks do well, the hedge funds walk off with the profits; if the banks do poorly, the taxpayers pick up the pieces.

Is this really what is happening? In a sense, one can't really answer that question: funds are fungible. We don't have a clear view of what would have happened but for the extra liquidity provided to the banking system. What is clear is that the extra liquidity makes the recapitalization of the banking system easier.

Restricting Hidden Bail-outs

Increasingly, there are concerns that the Fed currently is too centered on bailing out ailing banks and financial institutions (and possibly even those losing money on the stock market) and less with maintaining the real strength of the economy..

This perspective was put forward by Princeton economics professor Uwe Reinhardt, in a letter to the Financial Times (February 21, p 10):

You [report](#) (Ft.com, February 18) that the Federal Reserve has quietly lent US banks “on relatively attractive terms” some \$50bn to ease the credit crunch now befalling main street American business.

Would it not have been more efficient for the Fed to have lent the \$50bn directly to main street business, on similarly subsidized terms, in place of feeding horses that may or may not feed the birds? After all, unlike most solid real businesses, banks worldwide have amply demonstrated their inability to fully understand and value the assets – often just casino-like bets – into which they place the enormous sums entrusted to them.

I realise, of course, that the Fed's lending directly to Main Street would immediately be decried as “socialism” in our financial press. Miraculously, when the Fed bails out inept private banks on subsidised terms it is called “prudence” rather than socialism. That may fool seasoned adults, but not any straight-thinking freshman in economics.

The fact is that when the Fed buys mortgages and other assets that are not widely traded, there is a risk that it will be overpaying—the lack of transparency should itself be a concern in a democratic society. It is understandable why the Fed wanted to do something about the freezing of credit markets; it is understandable that those in the affected institutions wanted a bail-out. But it was incumbent on the Fed to do so in ways which do not put at risk taxpayers money²³, and which do not reward the financial institutions for their behavior. The fact is that the financial markets created these non-

²³ Profits of the Fed are turned over to the Treasury, so that any losses have a direct impact on the Treasury.

transparent hard-to-price financial instruments; they should now bear the consequences. If the Fed has used only a small fraction of the financial ingenuity that went into the creation of the mess, it could have protected American taxpayers against the risks; it could, for instance, have insisted that the banks from which it bought these mortgage backed instruments provide insurance that, should the value of these instruments decline, e.g. as a result of an increase in default rates, the banks would make the Fed whole. One could only surmise that it deliberately decided not to protect American taxpayers; and that it may have done so because what was desired was a bail-out. Congress should consider passing legislation to ensure that when the Fed engages in such risky transactions, American taxpayers are protected, and that whatever it does, should be done more transparently. Similar legislation should be undertaken in other countries.

The Foreclosure Problem

The immediate problem facing the U.S. today is that of mounting foreclosures—by some estimates, if house prices fall as much as some (like Shiller) predict, as many as a quarter of all mortgages may be underwater. Not all of these will default. But unless something is done about the foreclosure problem more mortgages will go into default, with follow-on consequences for the financial sector.

Dealing with the current foreclosure problem: a homeowner's chapter 11

There are a number of easy ways of dealing with the foreclosure problem—such as bailing out the lenders at the same time as writing down the loans—which, in the absence of budget constraints and worries about future moral hazard would make everyone (other than ordinary taxpayer) happy. Individuals could stay in their homes and lenders would avoid taking a hit to their balance sheets. Knowing that the government is taking this risk off of balance sheets would contribute to alleviating the credit crunch.

The challenge is how to save the homes of the hundreds of thousands of those who otherwise would lose their homes, and not bail out the lenders, who should be made to bear the consequences of their failures to assess risk.

One answer is a “homeowners’ chapter 11”—a speedy restructuring of liabilities of poorer homeowners, modeled on the kind of relief that we provide for corporations who cannot meet their debt obligations. Chapter 11 is premised on the idea that keeping a firm going is critical for the firms’ workers and other stakeholders. The firm’s management can propose a corporate reorganization which the Courts review. If found acceptable, there is a quick discharge of debt—the corporation is given a fresh start. The homeowners’ chapter 11 is premised on the idea that no one gains from forcing a homeowner out of his home. There are large transactions costs associated with foreclosure. This relief should be available for households with income below a critical threshold (\$150,000) and with non-household, non-retirement wealth below some critical threshold (perhaps dependent on age). The house would be appraised, and the individual’s debt would be written down to, say, 90% of the level of that appraisal (reflecting the fact that were the lender to have to proceed with foreclosure, that would be

substantial transactions costs). The borrower could then get a FHA loan as described in the next section.

Expanded homeownership initiatives

Advocates of the reckless subprime mortgages argued that these financial innovations would enable large numbers of Americans to become homeowners for the first time. They did become homeowners—but for a very short time, and at a very high cost. The fraction of Americans that will be homeowners at the end of this episode is likely to be lower than at the beginning. The objective of expanding homeownership is, I believe, a worthy one, but clearly the market route has not worked well—except for the mortgage brokers and investment banks who profited from them.

The underlying problem is simple to state: median household income has been falling, and house prices rising. This means that housing is becoming less and less affordable to more and more Americans. There are no easy fixes to the declining incomes (other than shifting the burden of taxation away from these individuals and towards those who have been doing well. Nor is there any way (short of public housing programs) that we can quickly reduce housing prices. (The market correction currently going on is likely to make housing more affordable.)

We need to help individuals with their housing costs. Note that America (and many other countries) does this with upper income individuals—tax deductibility of mortgages and property taxes means that the government pays a large fraction of the carrying costs. But ironically, it does not do that with those who need the help the most.

A simple remedy is converting the current mortgage and property tax deduction into a flat rate cashable tax credit; the reduction in the subsidy to upper income Americans could help pay for the subsidy for poorer Americans. (Even better would be a progressive subsidy, with a higher rate for the poor than the rich). A 25% tax credit would increase the affordability of housing for many Americans.

New Mortgages

Ironically, the financial sector, for all of its claims at innovation, has not innovated in ways which are directed at shifting risk from poor Americans to those who are more able to bear the risk. For instance, even if mortgages are variable rate, poor Americans struggling to make ends need to know what their monthly payments are going to be. One can have fixed payments, even with variable rate mortgages, if one lets the maturity of the mortgage be variable.

The government has repeatedly had to take the initiative in innovating financial products (like making mortgages widely available) that meet the needs of ordinary citizens. When they are proven, the private sector often steps in. This may be another instance where

government will have to take the initiative, because of the failure of the private sector to do what it should.

Preventing foreclosures

There is little, at this juncture, that government can do to prevent large numbers of mortgages from going “underwater,” i.e. the mortgage will exceed the value of the property. But not all properties that are underwater will go into foreclosure. In a world with full rationality and perfect pricing, clearly individuals who see that the value of the house is less than the value of the mortgage should default: they can buy another (or the same) house at the lower price, and will be better off at least by the amount that the house is underwater. But individuals care about their reputation, and many will be reluctant to go into foreclosure. That is why the kinds of programs described in the previous section may help: if they can stay in their homes and meet their mortgage payments, they will try to do so.

There are other proposals that affect incentives to default. One proposal (due to Martin Feldstein) would exchange, say, 20% of the individual’s current mortgage for a lower interest rate government loan (the government could pass on the advantage of its lower borrowing rate, so that the program would not cost the government anything). But the government loan would *not* be a non-recourse loan, so that even if the individual defaulted on his house, he would still be obliged to repay. There would then be little incentive to default. Individual’s would only default when the price of the house was lower than the non-recourse debt, and for that to happen would require a very large fall in real estate prices.

One interesting aspect of the proposal is that it implicitly recognizes a market failure in financial markets—that the government has an advantage, both in raising funds (because of the almost zero probability of default) and in collecting. These have provided part of the rationale for government student loan programs and government mortgages; and yet the right has often insisted that the government not engage in these financial activities.

Beyond that, this proposal would, in effect, be giving a large gift to lenders—in effect, homeowners would be asked to give up their option, in return for a lower interest rate. (Most likely, financial unsophisticated borrowers would not understand the market value of the option, and would only see the reduced payments. In a sense, the government would be duplicitous, unless it informed them of the value of the option.)

A slight modification of this proposal would, however, reduce the likelihood of foreclosure at the same time that it would not be giving such an unwarranted transfer to lenders. The government could act as an intermediary, allowing lenders to buy back the option at a fair market value (thereby reducing the uncertainty which they and markets face), and encourage households to do so (a) using (most of) the proceeds to buy down the value of the outstanding mortgage; and (b) convert another 10% to 20% of the mortgage into a recourse loan with interest at the government interest rate (plus an

appropriate transactions cost). Lenders participating in this program would, of course, have to waive any pre-payment penalties.

Fiscal Stimulus

Under current circumstances, monetary stimulus is likely to be ineffective, for several reasons, and even were it effective, it is not obvious that that is desirable. Over recent years, monetary policy has worked mainly by encouraging a housing bubble, which has sustained a consumption boom. (High levels of profits have meant that many firms are less dependent on borrowing than might normally be the case.) (a) If monetary policy works through the same channels, it is not clear that that is desirable—it will simply prolong the adjustment period. (b) Banks are not going to be willing and able to lend, given the impairment to their balance sheets and the uncertainties which they face—including uncertainties concerning their balance sheets. (c) With prospects of a continued decline in real estate, it is not clear that households either will be willing to take more money out of their housing, in mortgage equity withdrawals. So far, interest rate reductions have had two effects: (a) they may have contributed to a weaker dollar, thus helping export America's problems to other countries. But from a global perspective, this is simply a new version of a "beggar thy neighbor" policy. (b) Their actions may have prevented a meltdown of the financial markets—but as we have suggested at an unnecessarily high cost.

Today, monetary policy faces two further challenges: increased liquidity in American (or European) markets does not necessarily translated into lower real interest rates—especially lower real medium or long term interest rates—if there is a belief that the lower interest rate will lead to higher inflation. As interest rates were raised by the Fed in the period after 2003, it had less of an adverse effect than some had expected, because medium and longer term interest rates did not increase in tandem. Today, we face the possibility that something similar will happen: as interest rates are again lowered, medium and long term interest rates may not fall. They may even increase.

Secondly, increased liquidity in American (or European) markets does not necessary translated into increased investment expenditures in the U.S. (or Europe.) The liquidity that is provided to financial markets can be spent wherever investors believe the returns are highest. There are worries that the increased liquidity in Western financial markets will show up as increased demand for real estate assets in China and elsewhere in Asia.

Even Bernanke seems to have given up on the notion that monetary policy can rekindle the economy. The burden must shift to fiscal policy. Unfortunately, there has been little attention paid to basic economic principles in the design of the stimulus package.

America needs a stimulus but it needs to be well designed and quick-acting. (If current trends continue, the same will be true for Europe.) Any stimulus will add to the deficit, but with the deficit soaring over the past seven years, it is especially important to have as big as bang for the buck as possible. The stimulus should address long term problems—and at the very least, it should not make them worse.

Automatic stabilizers—programs that lead to increased spending if and only if the economy goes into a downturn—are able to dose out the right medicine as the economy needs it. America has one of the worst unemployment insurance systems among advanced industrialized countries. It should begin by strengthening it not just because it's the right thing to do but because money received by the unemployed would be spent immediately and so help the economy. Unemployment insurance has the biggest bang for the buck.

Unfortunately, states and localities are already beginning to feel the pinch—and will do so even more as property values fall.²⁴ Typically, they cut back spending in tandem with the decrease in revenues. (Most states are required to have balanced budgets, and are loathe to raise taxes in the midst of a recession.) This acts as an automatic destabilizer. The federal government needs to provide some assistance to the states and localities, to prevent this happening, and even better, to help them address the striking inadequacies in infrastructure. New Orleans levees and Minneapolis bridges are the tip of an iceberg: we as a country have underinvested in infrastructure. Spending on infrastructure would promote growth in the long run and strengthen the economy in the short run.

The Bush Administration has long taken the view that tax cuts (especially permanent tax cuts for the rich) are the solution to every problem. This is wrong. The problem with tax cuts in general is that they perpetuate the excessive consumption that has marked the American economy. But middle and lower income Americans have been suffering for the last seven years—median income is lower today than it was in 2000. A tax rebate targeted only at lower and middle income households makes sense, especially since it would be fast acting.

There is some reason to be worried that the bang for the buck from tax rebates may be less than in previous occasions, because of the high level of indebtedness and the growing awareness of difficulties in obtaining credit going forward. Many Americans can be expected to use some or all of their tax rebates to pay off some of their debts. There would be real benefits for their sense of security; and the financial system may benefit from a lower rate of defaults. But the stimulus to the economy, in terms of increased expenditures, may be less.²⁵

It would be nice, of course, if we could stimulate investment in plant and equipment—not just in more housing. But the standard ways of doing this are largely gifts to corporations for investment that they would otherwise have done—the bang for the buck is remarkably small. It is possible to craft a more effective investment stimulus, a marginal investment tax credit, but in the past, the corporate sector has shown little interest in such measures. It is the gift they want, not the stimulus.

²⁴ A similar dynamic occurred in the 2001 downturn.

²⁵ There should be something done about foreclosures—along the lines discussed in the previous section. But not too much should be spent on this. A big fund would almost surely wind up being a bail-out fund for investors and they are not the ones who need help from tax-payers.

America's infrastructure, and public investment more generally, has been starved for a long time. America should be engaged in R & D to reduce our dependency on oil, and should be investing more in public transportation. These investments would bring triple dividends, not just the ordinary direct economic returns, but make us more energy secure, and, by reducing the demand for oil, could help drive down the price of oil. Not a single one of the world's top ten airports lies in the United States. Studies show that the returns to public investment in R & D are extra-ordinarily high. These public investments would be complementary to private investments, and by increasing the returns to the private sector, actually encourage investment there.

Other forms of public investment, such as on education, would stimulate the economy in the short run—far more than tax rebates would—and promote growth in the long run (again, far more than tax rebates.)

In 2001, the Bush Administration used the impending recession as an excuse for the tax cuts for upper income Americans—the very group that had done so well over the preceding quarter century. They were not designed to stimulate the economy, and they did so only to a limited extent. Many of the country's current woes can be traced to that decision. To keep the economy going, the Fed was forced to lower interest rates in an unprecedented way, and to look the other way as America engaged in reckless lending. The economy was sustained—on borrowed money—but it was unsustainable.

The example, unfortunately, was copied by other countries. But now the problems at the bottom are worse, especially with rising food and energy prices.

We have described what a good stimulus program should focus on: (a) maximizing the bang for the buck—the largest stimulant per dollar of deficit; (b) addressing the country's long run problems; and (c) fast acting.

This time America, and other countries that face a slowdown, need a stimulus that stimulates. We know how to design a stimulus that works and will help address some of America's glaring problems, many of which (including the disparity between the rich and the poor) have only grown worse.

PREVENTING FUTURE CRISES: REFORMING FINANCIAL REGULATION

As we have repeatedly emphasized, there are two compelling arguments for regulation: the actions within the financial sector have effects on *others* and government (partly as a result of this) will have to bear the costs of mistakes. Just as fire insurance companies must regulate those they insure, requiring them to have sprinklers, so too government, as

insurer of last resort, must do what it can to lower the probability of the (implicitly or explicitly) insured against event occurred.²⁶

It is clear, for all the best intentions, regulations imposed in the past have not worked, and as we think of new regulatory systems, we have to think of the reasons for the failure of past systems. At least three factors play a role: (a) Recent beliefs—grounded neither in economic theory, or historical experience-- in self-regulation (that market discipline ensures that only the best survive) has resulted in deregulation. (b) Regulatory capture—the regulatory mechanism has been captured by those that it is supposed to regulate, especially common in the international context. (c) A lack of understanding of finance and accounting has led to regulatory frameworks that are open to regulatory arbitrage and manipulation. In addition, there is always a lack of balance: there is no comparison between the compensation of the regulators and those they are supposed to be regulating. This may contribute to regulatory capture, but it should be clear—it does not make regulation infeasible. We have a tax system which collects taxes, even though those paid to avoid taxes are paid far more than the tax collectors. But an understanding of this imbalance has implications for the design of the regulatory system.

There are two more challenges facing the design of the regulatory system. We want to encourage innovation, and we want to promote macro-stability. We have noted earlier how some regulations, for instance, may act as automatic destabilizers.

Finally, in our world of globalization, each country worries about competition. There is a worry this will generate a race to the bottom. I believe that good regulation is, or can be, a competitive advantage. Singapore has attracted funds because those putting money into that country have some confidence that its banks are viable. But just as actions of banks have externalities, so too do regulatory frameworks, and it would be best if there were coordinated actions in adopting good regulatory frameworks. But if this is not achieved, I argue in the final subsection, that Europe and the United States have sufficient economic influence to ensure the adoption of good regulatory frameworks within their borders.

In the paragraphs below, I describe certain key aspects of the regulatory framework that I think may not have received sufficient attention. Regulators should focus more on improving incentives, we need to pay more attention to accounting frameworks, and we need some new regulatory frameworks.

Improving Incentives

There have been problems in market incentives and regulatory incentives that almost surely played an important role in each of the problems detailed above. For markets to work well, private incentives have to be aligned with social objectives. This has not been

²⁶ There are other aspects of regulation in the financial (and other) sectors, which we have discussed elsewhere: ensuring competition and consumer (borrower, investor) protection; and ensuring access to credit for underserved groups.

the case. Here are a set of reforms that would at least improve the alignment of incentives.

1. Improved incentives in securitization

One of the problems with securitization is that mortgage originators did not hold the mortgages, and so had less incentive to ensure that the borrower had the ability to repay. Their incentives were directed at *persuading* the buyer of the mortgages that they had the ability to pay. *Requiring that mortgage originators retain a fraction of the risk of the loans that they originate would encourage greater care in lending.*

2. Improved incentives in rating agencies

This is one of the two incentive issues that have been widely discussed: with rating agencies being paid by those putting together the complex products, they have an incentive to please those who are paying them. The problems are analogous to those confronting the accounting firms, that Sarbanes-Oxley attempted to address. The fix here is not so easy. There are large numbers of buyers of securities, and it is not obvious how to design a system in which the buyers of the securities pay the cost. The problems are related to fundamental problem in the supply of information; it is one of the reasons that in some key areas (like food safety) we do not rely on private certification. There is at least an overlay of government oversight. This is part of the motivation for the financial products safety commission discussed below.

3. Improved incentives in hedge funds and financial managers

Part of the problems in recent years in financial markets may be related to the incentive structures facing hedge fund managers, and financial managers more generally. These are incentive structures designed to enhance risk taking; the question is, are they encouraging excessive risk taking, and partly at the expense of the public? The incentive structures encourage gambling. Financial managers can do well for themselves if they make large amounts one year, offset by equal losses the next. The former results in large bonuses; the latter has no penalty.

It is when the hedge funds interact with regulated financial entities, like banks and fiduciaries, that the problems become particularly acute. Government has imposed regulations on these financial entities for good reason—concern about systemic risk and the protection of the savings of retirees. It is not the intent of government to give opportunities for those in the financial markets to make money through regulatory arbitrage or by taking advantage of implicit or explicit government insurance (bail-outs). But the current system gives them ample opportunity to do so. Accordingly, the incentive pay structures of those hedge funds or financial entities that either receive funds from or provide products to these regulated financial institutions should be regulated. (This is great but should there also not be controls on the level of total leverage?) The incentive pay structures within the regulated financial institutions (banks, fiduciaries) should similarly be regulated.

At a minimum, bonuses must be based not on the performance in any single year, but on the performance over a much longer time period; at least a substantial part of the bonus paid in any one year should be held in escrow, to be offset against losses attributable to the investments made in subsequent years.

4. Improved incentives for regulators

The full regulatory authority of the regulators (e.g. of the Fed) was not used to prevent the current problems. It was only after the crisis that the Fed adopted regulations—a classic case of closing the barn door after the horses are out. There is a large literature on regulatory capture; self-regulation typically does not suffice, partly because of incentives (those in the financial markets were making good money; no one wants to be a party pooper), partly because of mind-set (those within the industry are less likely to see a bubble than disinterested third-parties).

Those entrusted with regulating the industry have to identify with those who are most likely to lose in the event of a malfunction of the market, not with those who are winning as a result of the malfunction of the market. At the very least, there is a need for greater balance.

In many industries, expertise resides mainly in those in the industry, and this poses a particular problem in the design of regulatory authorities. There are today, however, large numbers of highly qualified individuals who understand financial markets (especially in academia) who could play a more active role in regulation. One would still have to take precautions, e.g. against revolving doors.

5. Conflicts of interest

Conflicts of interest give rise to distorted incentives. There are several potential conflicts of interests that have surfaced; at this juncture, it is important to ascertain what role they played. Those involved in the mortgage business (at any point in the supply chain) should not have a financial interest in firms that appraise property values. The problems are obvious.

Similarly, for a financial firm to buy “insurance” for its mortgages (bonds) from a company in which it owns a large stake vitiates the purpose of insurance. It is not insurance, but self-insurance. It does not transfer the risk, even if it helps improve “ratings.” But if it does help improve ratings, it is almost surely partially due to failures in the rating methodologies.

At the time Glass-Steagall was repealed, there were worries about a variety of forms of conflicts of interest. In the years since, it appears that some of those worries have, at least in some instances, were justified. While there may be no appetite for reinstating

restrictions, more thought should be given to regulations, with penalties for those that disregard them, that might address some of the problems that have appeared.

Information, Accounting and Capital Adequacy Frameworks

Much recent discussion has focused on increased transparency and more extensive disclosure. It has become increasingly clear that disclosure requirements by themselves will not suffice, and that the manner in which information is disclosed makes a difference. The latter point was highlighted by the controversy over disclosure of stock options, and the requirement that they be “expensed.” Many firms that made extensive use of stock options did not object to disclosing that information in footnotes, presumably because they understood that such disclosures would have few consequences; they objected strenuously to even conservative approaches to accounting for these stock options, because it would reveal the extent to which ownership claims were being diluted.²⁷

Accounting is important, because it provides frameworks in which information is presented. On the basis of that information, taxes are levied, firms make decisions, e.g. about which activities to expand, and which to contract, and investment gets allocated. Flawed and distorted information leads to flawed and distorted decisions. The problem, repeatedly noted, is that there are incentives to provide flawed and distorted information. Firms have an incentive to provide too low an estimate of profits for tax purposes, too high an estimate to persuade investors to invest more in their company. These countervailing incentives often act as a check against each other.

In recent years, innovations in accounting (not all of positive value) have enabled some firms to maintain, in effect, multiple books—presenting one set of numbers to tax authorities, another set of numbers to investors. But just as they learned how better to deceive tax authorities (by and large, viewed as a legitimate activity), they learned how better to deceive investors. Making matters worse, distorted compensation systems—including stock options—provided even stronger incentives for providing distorted information.²⁸

The Enron-Worldcom scandals of the early years of this decade exposed some of these accounting problems. Not enough attention has been paid to the failure of the accounting frameworks in the current context. They signaled huge profits in 2003-2006, but did not signal the offsetting even larger losses that have now been exposed. This should not have happened; what it signals is, I think, that something is wrong with the accounting frameworks.

²⁷ I have discussed the issue of disclosure requirements more extensively elsewhere (Tobin project paper.)

²⁸ One can design incentive systems with less risk and better incentives than traditional stock options. Indeed, these result in corporate executives bearing risks of random stock market fluctuations, unrelated to their activities (including changes in interest rates). In practice, however, stock options have served more as an excuse for high corporate compensation; when shares have fallen, the executives have found other ways of receiving compensation, so that the relation between corporate performance and compensation is relatively weak. See J. E. Stiglitz, *Roaring Nineties*, WW Norton, 2003.

Bad accounting frameworks not only do not provide accurate information; they lead to distorted behavior. Not marking to market, for instance, provides an incentive for excessive risk taking: one can sell off assets that have gained in value, recording a profit, and hold on to assets that have decreased in value (keeping them at book value.)

But we are beginning to discover some consequences of (poorly designed) mark to market systems. Banks are now marking to market their liabilities. As their default probability increases, the value of their bonds decreases, and so their balance sheet improves! Bonds, of course, may have covenants that they cannot be bought back at below par—without such covenants, borrowers would have an incentive to announce bad news, to depress the value of their debt, so they could buy it back at below par. Never mind that the fall in the price of bonds indicates that the firm is going to face higher borrowing costs in the future—it is signaling worse future prospects for firms. Under current U.S. rules, the firm can record an improvement in its position.

In the current crisis, off-balance sheet assets were obviously incorrectly priced. Banks could book some of the profits they made in “repackaging” sub-prime mortgages, even though they retained residual risk in these off-balance sheet mispriced assets. It is not clear to what extent these accounting problems simply misled those looking at the banks, and to what extent these provided the underlying motivation for the transactions. In any case, it is clear that accounting failures provided scope for the problems that have been uncovered.

While the problems of not-marking to market have long been understood, the recent crisis has exposed some of the problems of using marking to market for capital adequacy (highlighting problems that critics actually raised before mark to market was imposed): market prices might *overshoot*, the decline in market prices exceeding the “true” decrease in value, forcing the bank to unnecessarily raise more capital and/or cut back on lending. The cutback in lending would, in turn, lead to further weakening in the economy. (It is, perhaps, ironic, that from the champions of markets comes an argument based on market failure.) Marking to market may thus exacerbate the automatic pro-cyclical effects of capital adequacy standards.

Given the long standing tendency of financial markets to over expand in booms, there is a need for countercyclical controls. One form is cyclically adjusted capital adequacy standards. In the most recent crisis, a simpler set of controls might have sufficed. As the bubble progressed, while the probability of a decline in price increased, the loan-to-value ratios increased. Requiring larger down payments (and assigning disproportionately higher risk to higher loan to value mortgages) almost surely would have dampened the bubble.

Designing better provisioning requirements (and adjusting these to the changing circumstances) might both have dampened the fluctuation and ensured that the consequences of the breaking of the bubble were less. While Greenspan often said that one cannot predict with certainty when there is a bubble, as home prices increased

(relative to incomes), the likelihood that prices would fall (by any given amount) was increased, and there should, accordingly, have been larger provisions.

By the same token, there are other indicia of impending problems, and these ought to be incorporated in provisioning requirement and capital adequacy standards. Research suggests that there may be some simple indicia of problems. Had these been employed, red flags would have been raised about some of the potential problems. As a World Bank study, headed by Amar Bhattacharya, done before the 1997 crisis pointed out²⁹, a strong indicator of a looming problem, for instance, are rapidly expanding credit (in the aggregate, or in particular institutions.) The capacity of institutions to expand rapidly their ability to make sound judgments about credit worthiness is limited. Problems in lending typically do not show up until two or three years after the rapid expansion has begun, so that in such situations the ratio of non-performing loans provides a poor indicator. There is seldom an economic transformation that would warrant this kind of rapid credit expansion. One of the recommendations of the World Bank study was the imposition “speed bumps,” for instance requiring higher than normal risk adjustments in capital adequacy standards and greater provisioning for such rapid credit expansions.³⁰

New Regulatory Frameworks

Improvements in incentives and accounting frameworks will help, but they will not suffice. Financial markets have been plagued with manias and bubbles that inevitably burst. One can never be sure that one is in one a bubble until after it bursts—but as prices soar beyond historical ranges, the probability that one is in such a bubble increases. For all the sophistication of modern risk management techniques, they have done little to affect the occurrence of these bubbles, perhaps as we learn how to manage risk better, we take more risks, and the new financial innovations have facilitated the ability to take on these additional risks. (Some argue that the use of modern risk management actually makes crises more frequent) In the case of many of the new financial products, it was difficult to ascertain what their *economic* function, i.e. they were not really tailoring risk products to meet the particular risk profile of particular investors. Indeed, what was going on was stripping assets apart and reassembling them, in ways that contributed to a lack of transparency? It is clear that no one really understood fully the risk characteristics. These products, rather than helping individuals manage risks, made it more difficult.

1. Financial products safety commission

Financial markets have innovated, but these innovations have resulted in hundreds of thousands of loans that go beyond individuals’ ability to pay. Even many those that are making their payments are facing hardship, anxiety, and stress. Clearly, the financial

²⁹ reference

³⁰ A proposal along these lines has been put forward by Charles Goodhart and Avinash Persaud, “A party pooper’s guide to financial stability,” *Financial Times*, June 5, p. 13. They focus on the growth of individual bank assets. Attention should also be directed at high growth rates of particular assets, e.g. home mortgages.

sector has not done a good job at analyzing the consequences of the products that they produce. Defective products can clearly have disastrous effects both on those who buy them, and on our economy.

In the current instance, those evaluating risk have made a number of systematic mistakes to which we have already called attention.³¹

Earlier, I explained the problem of having private sector certification. A financial products safety commission could help fill in the gap, particularly in relationship to products being produced by and invested in by regulated entities. Each product would have to have a stated objective (e.g. in what ways was it helping manage and mitigate risk; what was the risk profile for whom the product was intended). Its risk characteristics would be identified, using conservative models which paid due attention to the failures previously noted. The Financial Products Safety commission would evaluate whether products provided significant risk mitigation benefits of the kind purported by the product. There would be a presumption that there “is no free lunch,” i.e. that higher returns could only be obtained at the expense of greater risk; and a strong presumption against complex products, the full import of which are hard to analyze.

The Financial Products Safety Commission would establish transparency standards that all those dealing with regulated financial entities would have to satisfy (including hedge funds and sovereign wealth funds.) It would have the power to ban certain products from the balance sheets of these regulated entities (just as there are currently restrictions on the assets that they can hold.³²

These reforms are particularly important given the scope for regulatory arbitrage that has been exposed in the recent crisis. Sub-prime mortgages were transformed, as if by financial alchemy, into AAA assets, so that they could be placed in fiduciaries who otherwise would not have been allowed to hold these risky products. Limitations in our

³¹ To recap: (a) They have underestimated the importance of correlated risks. They have failed to recognize the significant *risk* of a bubble (no one can be sure that there is a bubble until it breaks, but as prices rise in a historically unprecedented manner, surely the probability that there is a bubble should have increased, and analysts should have analyzed precisely the consequences—and informed those taking out these mortgages as well as those buying them. There was a mathematical impossibility: prices could not continue to rise and median incomes continue to fall, unless carrying costs fell in a totally unprecedented way.)

(b) They failed to recognize that securitization increased the problems of information asymmetries, affecting incentives of those originating loans. This should have been expected to adversely affect returns; but they failed to take account of this in their estimation of returns.

(c) They failed to take account of systemic risks and fat tails. “Once in a century events” have been occurring every ten years, and that fact itself should suggest that something is wrong with the models.

These problems compounded, for instance, as they bought “insurance” against defaults. But the insurance companies were not sufficiently capitalized to deal with systemic, correlated risks, the occurrence of which was far more likely than they recognized.

³² Alternatively, it could impose restrictions, limiting purchases to a certain fraction of their portfolios—though given the risk that can be hidden inside these products, any purchases should be viewed with care.

accounting system similarly provide scope for “accounting arbitrage.” We understand better now some of the *wrong* motivations for the production of new financial products.

2. Regulatory Instruments and the Financial Markets Stability Commission

Not all the regulatory instruments that could have been used have been used to control the bubbles that have imposed such costs on the economy. For instance, increasing collateral requirements (margin requirements, down payments) was a natural instrument to have employed, both in the stock bubble of the 90s and the housing bubble of today. The problem, noted earlier, is that the Fed (partly out of ideology) has been reluctant to use these instruments.

In the current regulatory framework, the focus is mostly on individual institutions (is a particular bank “safe and sound”). Little attention is placed on the overall framework. Financial markets have become increasingly interrelated. One cannot look at the system focusing on banking alone, or on securities markets alone. There is a need for a Commission that looks at the financial markets overall, and assesses whether the various regulatory agencies are doing what they should be doing to maintain financial market stability. This Commission, like the Financial Products Safety Commission, should not be dominated by those from the financial markets, but should rather be more broadly representative, with, e.g. economists who take a broader systemic view, and reflect the concerns and views of main street and labor as well as financial markets.

We noted earlier that regulatory authorities need to pay increased attention to indicia of crises (problems of “vulnerability”)³³. Earlier, we noted one of the factors is rapid expansion of credit. Rapid expansions of credit into new markets (like the sub-prime market) should be the subject of increased regulatory scrutiny. To be sure, we should encourage financial innovation—making credit available to those who previously did not have access can be a valuable social contribution. But sometimes (perhaps often) there was a good reason that credit was not made available—there was a high risk of non-repayment. There is a need for balance and caution—encouragement for the creation of new products, but an awareness of the potential risks.

Boundaries of regulation

Government has a legitimate argument for imposing regulations on entities that threaten the stability of the financial system. There has long been a view that investment banks do not need to be regulated, because their owners, and not the public, bears the risk if they make bad investment. The government financed bail-out of Bear Stearns has laid to rest such claims. The rationale for the government bail-out (as for the government

³³ In the aftermath of the East Asia crisis, a literature developed trying to identify the factors that made a country more vulnerable. See, e.g. Jason Furman and J. E. Stiglitz “Economic Crises: Evidence and Insights from East Asia,” *Brookings Papers on Economic Activity*, 1998(2), pp. 1-114 and the studies cited there. Interestingly, I suspect in terms of the factors identified there, it should have been apparent that the U.S. was highly vulnerable.

orchestrated bail-out of LTCM) was that there would be systemic consequences if a failure occurred. This means that any entities that are closely interlinked with those parts of the financial system over which government has regulatory responsibility (banks, pension funds, other fiduciaries, etc) need to be regulated. The extent and nature of the regulation should presumably depend on the nature of the systemic risks which problems in each entity (or from correlated behavior in a group of firms) might pose.

Thus, one might argue that gambling between consenting adults should be allowed: only the parties to the gamble are at risk. On this reasoning, hedge funds that do not sell financial products to or receive loans from banks or other regulated entities should have at most limited regulations, e.g. certain behaviors might be proscribed. Hedge funds (or similar entities) wishing, however, to sell financial products to or receive loans from banks would have to register as “qualified financial entities,” and be subject to more extensive regulation, including regulations concerning disclosure and incentives.

International perspectives

Each country, in designing its own regulatory framework, has a tendency to focus on impacts within its own country. And just as each bank ignores the externalities to which its actions give rise, so too for individual countries. For instance, some countries have expanded their banking system by *regulatory competition*, including weakening regulations designed to ensure compliance with the tax code. There is a worry, noted earlier, that regulatory competition will result in a race to the bottom.

The first best solution would entail coordination in the design of good regulatory standards. The limitations of Basle II have already been noted. If appropriate regulatory standards are not established, then it will be necessary for each country to design its own regulations to protect itself. It cannot rely on regulations of others. European banks’ losses from sub-prime mortgages now appear to be greater even than those of U.S. banks.

It would be easy to enforce good standards, especially on those countries that have become noted for the role in evading regulations and taxes. There is little reason that so much financial activity occurs in many of these off-shore centers, except to avoid taxes and regulatory oversight; but this undermines the integrity of the global financial system. These off-shore centers survive only because we allow them, and there is no reason that this should continue. America, for instance, has already shown that it can enforce its standards concerning financial relations with terrorists groups. It could do so as well with those who are engaged more broadly in tax evasion, money laundering, or other such anti-social activities. (The recent response of Germany and others to the tax evasion disclosures out of Lichtenstein highlight that much more can be done that has been done in the past.) Similarly, restricting Regulated American or European financial entities in their dealings with financial institutions and other entities in jurisdictions that have filed to comply with OECD transparency standards or other regulatory standards that U.S. or Europe might agree upon, and which did not cooperate in providing records of accounts

to tax authorities in the United States, would shortly either put these “rogue” financial institutions out of business—or force them to change their behavior.

CONCLUDING COMMENTS

The United States—and much of the rest of the world—is experiencing a major problem in its financial system. As this paper is being completed, it is still not clear the extent of the global macro-economic consequences. As we have noted, this is at least the third major problem involving America’s financial institutions in the last quarter century. It is clear not only that they were not the font of wisdom in the management of risk that they purported to be, but that they did not even understand well the products that they were creating. It is also clear that there will be many innocent victims of these failures—the consequences are not limited to the institutions themselves. Taxpayers as a whole are now bearing risks as a result of the financial systems failure to manage its risks.

Doctors learn a great deal from pathologies. So too, economists should learn from the failures of the economic system. We have attempted to provide a broad, theory-based diagnosis of what went wrong, and on the basis of that diagnosis, to prescribe remedies—short term remedies that will minimize the depth and duration of the downturn and long term regulatory reforms that will reduce the frequency and depth of such occurrences in the future. We have looked for reforms that are consistent with other goals, such as promoting innovation, stabilizing the economy, and maintaining some semblance of equity. Realism requires a recognition that even with our most valiant efforts, there will be crises in the future. If we succeed in reducing the riskiness of the system, it will encourage market participants to take more risk. Whatever regulatory system we devise, there will be those who will try to find weaknesses and exploit those weaknesses for their own gain, even if it imposes costs on others—and those in the financial markets will continue use their financial clout to induce the political processes to make “reforms” (as arguably they did in the repeal of Glass Steagall) that enhance their profits, at the expense of the well-being of society more generally.

It is not easy to summarize the results of this analysis. The entire episode exemplifies many of the principles elucidated by the economics of information—yet many of the models explicitly or implicitly in the mind of both regulators and market participants ignored the imperfections and asymmetries of information, to which actions within the financial markets were contributing. Incentives matter, but distorted incentives lead to distorted behavior. Incentives at both the individual and organizational level were distorted. Some of the recent actions taken to address the current problems have the potential of exacerbating these distortions in the future.