Lessons from the Global Financial Crises

by

Lawrence J. Lau

Working Paper No. 11

July 2012

Institute of Global Economics and Finance
The Chinese University of Hong Kong
13/F, Cheng Yu Tung Building, 12 Chak Cheung Street, Shatin, Hong Kong

Acknowledgements

The Institute of Global Economics and Finance is grateful to the following individuals and organizations for their generous sponsorship (in alphabetical order):

Individuals	Organizations
Johnson Cha	Bei Shan Tang Foundation
Vincent H.C. Cheng	BCT Financial Limited
C.K. Chow	China Development Bank
Fang Fang	Henderson Land Development Co. Ltd.
Victor K. Fung	The Bank of East Asia, Limited
Frederick Hu	The Hongkong and Shanghai Banking Corporation Limited
Lawrence J. Lau	Sun Hung Kai Properties Ltd.
David K.P. Li	
K.L. Wong	

Lessons from the Global Financial Crises

Lawrence J. Lau*

July 2012

1. Introduction

The Chinese economy has survived the global financial crisis of 2007-9 reasonably unscathed, as it did the East Asian currency crisis of 1997-8. It has achieved a real rate of growth of 9.2 percent in 2009, 10.4 percent in 2010 and 9.2 percent in 2011. It will likewise survive the current financial crisis affecting some of the member countries of the European Union.

2. What Caused the Global Financial Crisis of 2007-2009?

In the following article I shall discuss the cause of Global Financial Crisis. The causes can be classified into four categories: Easy money in the United States, Irrational exuberance unrestrained, Failures of regulation and supervision and Defects in the institutional design.

I will first explain Easy money in the United States as a cause of Global Financial Crisis. The real rate of interest in the U.S. has been kept low and often negative since 2001 (see the charts in appendix 1 and 2). Low and often negative real rates of interest encouraged borrowing and the use of leverage and these events fed the bubble in asset prices, especially real estate prices, in the U.S. and elsewhere. The high rate of growth of money supply relative to the rate of growth of GDP coupled with the low

* Ralph and Claire Landau Professor of Economics, The Chinese University of Hong Kong and Kwoh-Ting Li Professor in Economic Development, Emeritus, Stanford University. All opinions expressed herein are the author's own and do not necessarily reflect the views of any of the organizations with which the author is affiliated.

rate of inflation of the prices of goods in the U.S. meant that the excess money balances would go into the asset (real estate and securities) markets, driving up the asset prices. The market risk premium before the outbreak of the global financial crisis was at an all time low as indicated by the very thin interest rate spread—less than 100 basis points--between junk bonds and U.S. Treasury securities of similar maturity in early 2007. This should not have been possible as no matter how clever a financial engineer may be, someone must ultimately wind up with the bad risks.

The second prominent factor causing Global Financial Crisis is Irrational Exuberance. Irrational exuberance is not uncommon--economic and financial bubbles have occurred from time to time all over the World for centuries, initially driven by self-fulfilling asset price expectations and abetted by the heavy use of leverage. However, bubbles can and should be contained and restrained by the suitable and timely restrictions on the use of leverage. For instance, the loan-to-value ratio of home mortgages can be lowered; the margin requirements for the purchase of common stocks can be raised. Other instruments include increasing the stamp duty/transaction taxes, and increasing the capital gains tax rate on assets such as property and securities, especially on assets held only for a short duration. There are many other different ways of lowering the expected net after-tax return of speculative investments and thus discouraging them. If bubbles are left entirely to the market, they will certainly eventually burst anyway but then they will have become much bigger and will therefore do much greater damage to the economy. Pricking a bubble early actually protects the investors who are the least knowledgeable and are often the last to enter the market and hence are “left holding the bag,” as well as the economy from the spillover effects. Recovery of an economy from a burst asset price bubble can take years or even decades. For example, the Japanese economy has yet to recover fully from the bursting of its property price bubble in 1990. Unfortunately, Japan governmental authorities were unwilling and unable to restrain the irrational exuberance.

The third factor is the failures of regulation and supervision, which requires a much detailed explanation. To understand the reasons behind these failures, it is vital to find out “why were the serious regulatory failures that allowed the global financial crisis to occur possible?” The first fundamental reason for this is the overly strong faith on the part of the financial regulators that whatever could go wrong “the market would take care of it.” It turned out that the market, in the absence of proper regulatory oversight, could not take care of it before huge damage was done. The second fundamental reason is a phenomenon known as regulatory capture—over time the regulatory

agencies have been “captured” by those same firms they are supposed to regulate, through lobbying and other efforts by the latter, and are thus frequently persuaded to relax regulatory requirements in favor of these firms.

It is also remarkable that regulatory failures have been manifested in many areas. The principal areas of regulatory failures, in addition to the failure to restrain irrational exuberance, can be further categorized into three areas. The first one is excessive leverage of financial institutions (as well as some non-financial firms) and of the financial sector as a whole; the second one is failure to ensure competitive markets; and the last one is failure to control moral hazard.

We will first discuss the problem of excessive leverage. Excessive leverage of a firm implies that it is more likely to fail because an ever so slightly temporary setback can turn the net worth of the firm negative and hence put the firm into bankruptcy. Moreover, excessive leverage encourages moral hazard, which is also known as “recklessness”, on the part of the borrowing firm because the managers / owners / shareholders lose relatively little, with the bulk of the losses borne by the creditors, when the firm fails, but retain the bulk of the profits when the firm succeeds. Excessive leverage of a firm also in turn increases the risk of other firms doing business with it or having such a firm as “counter-party.” Besides all these mentioned effect, excessive leverage of a firm also magnifies the negative spillover effects of its potential bankruptcy—not only does it have to shut down but its failure also impacts negatively all of its creditors, contractors, lenders and suppliers, firms that may otherwise be well managed but happen to do business with it.

Furthermore, at a macroeconomic level, excessive leverage, if widespread, enables and magnifies the domino effect of the insolvency and bankruptcy of a firm on the entire financial system through the resulting failures of the firm’s creditors which include banks, contractors, lenders and suppliers. Their failures may in turn trigger additional failures if they are also excessively leveraged. Excessive leverage also enables speculators such as hedge funds to take sufficiently dominant long or short positions in the markets of certain financial instruments such as credit default swaps (CDSs) to affect the market outcomes and to engage in predatory speculation on a large scale. These can incur detrimental effect to the macro-economy of countries.

Because of the potentially large negative externalities that excessively leveraged financial institutions can create, there should be strict limits on the degree of leverage they can use. This is what Basel II and Basel III are about—more capital means less

leverage, other things being equal. Unfortunately, in reality, both financial institutions and countries took lenient measures to regulate leverage activities. The U.S. regulators (Securities and Exchange Commission) made the mistake of relaxing the capital requirement on the U.S. securities firms sometime in the early 2000s, which in turn allowed these firms to achieve their high leverage, at the request of a group of large U.S. securities firms. In addition, many financial institutions undertook off-balance-sheet activities. For examples, "special-purpose vehicles (SPVs)," "special investment vehicles (SIVs)," "structured investment vehicles (also known as SIVs)," "shadow banking" to hide their true degree of "excessive leverage."

Now we turn to see when leverage should be defined as "excessive". Following the currently accepted international practice of 8% capital requirement, leverage is considered to be excessive when the assets-to-equity ratio is greater than 12.5 to 1 for a financial institution and greater than 5 to 1 for a non-financial firm. In addition, the norm for New York Stock Exchange-listed non-financial firms is no more than 2 to 1. To name a few illustrations of capital requirement in reality, capital Long Term Capital Management (LTCM), a hedge fund, failed in 1998 in part because of its high leverage—at the time it had capital of approximately US$4 billion but assets of approximately US$100 billion and even greater potential liabilities. Besides, Bear-Stearns and Lehman Brothers had leverages of between 30 and 50 to 1 when they failed. Also, UBS reportedly had a total-assets-to-net-worth (stockholders' equity) ratio of 64 and Deutsche Bank and Barclays had a ratio of 53 at the end of 2007.

To conclude a bit for excess leverage's contribution to global financial crisis, in financial crisis after financial crisis, it has always been the excessive leverage that causes the negative domino effect on the rest of the economy. When a badly managed but highly leveraged firm collapses, it brings down with it all of its creditors, contractors, lenders, suppliers, and counter-parties in its financial derivative transactions, in addition to its own shareholders. It also causes all of its employees to lose their jobs. The excessive leverage of banks in developed economies did not just happen overnight. It was the combined result of lax regulation and supervision, "regulatory capture," and the competitive pressure in the financial markets. Banks compete with one another. If a bank is allowed to have a higher leverage, its return on equity will be higher than its competitors, at least in the short run. In order to compete effectively, its competitor banks will need to emulate the high leverage, resulting in excessive leverage across the board.

Now we will turn our focus to another factor that magnifies regulatory failures: the

failure to Ensure Competitive Markets. Markets yield economically efficient outcomes only if they are competitive. Markets are competitive only if they fulfill the following basic conditions: First, all market participants and potential market participants have access to the same or nearly the same information (although their expectations of the future may be different). Second, all market participants and potential market participants are small relative to the market so that no one participant can affect the outcome of the market significantly through its actions or inactions; and thirdly, all market participants and potential market participants are free to enter or exit the market at any time.

The efficient market conditions mentioned has several implications to financial market. First, financial markets can be efficient only if there is no important information asymmetry, that is, only if all market participants have access to the same information. When not all market participants have the same information, the market system is no longer efficient or fair (the playing field is not level). Hence, full and complete disclosure of financial information by publicly listed companies must be required. In addition, the markets can be efficient only if investors with large positions do not abuse their monopolistic or monopsonistic powers. All large investors should be required to disclose their positions on securities and other traded instruments held if they exceed a certain threshold and their transactions, including off-exchange transactions (this rule is already in force on many public exchanges).

Secondly, accurate and timely information on publicly listed companies is also necessary in order to enable their good governance. Regulatory agencies have a responsibility of assuring symmetry of information and full disclosure in order to ensure the competitiveness and fairness of the public markets. The regulatory agencies failed to demand full and complete disclosure of financial information and large financial transactions, especially transactions conducted off public exchanges, by large financial institutions and other publicly listed companies. For example, when the same financial derivative instrument is sold to different market participants at different prices at the same time (which can happen since the transactions are not executed on a public exchange), the market will fail to be efficient or fair. In most public markets, disclosure of significant ownership interest is required of a single investor or a group of investors acting in concert. For example, over 5 percent of ownership from a single investor or a group of investors acting in concert is required by a publicly listed company. When one market player has a large enough market position to influence or manipulate the market outcome, but fails to disclose it, the market outcome is neither efficient nor fair and the interests of small investors are not

adequately protected. This disclosure requirement, however, has not been extended to markets for certain forward and futures contracts and financial derivatives, resulting in severe information asymmetry. It should indeed be extended. There may also be serious conflicts of interest if a market participant is simultaneously acting as a principal for its own account and as an agent for others, for example, when a financial institution promotes a security but at the same time sells it from its own proprietary portfolio without disclosing it. Such potential conflicts should always be required to be disclosed ahead of time.

One area that deserves some thought is the disclosure of exposure to counter-parties with whom the firm has transactions. There is a limit to how much a well-managed bank can lend to a single customer at any one time as a percentage of the bank's net worth, a cap on the degree of exposure to the customer. However, no similar limit exists on its exposure to a single counter-party. The bank should know its counter-party's total outstanding potential liabilities relative to the counter-party's net worth. There should be an explicit limit on the degree of exposure to individual counter-parties based on information on their credit-worthiness and aggregate exposure, beyond simple reliance on their credit ratings. Moreover, there should also be some rules as to the maximum share of a given financial instrument that an investor is permitted to hold at any given time in certain markets, like the rule that no firm is permitted to bid for more than 25 percent of a given U.S. Treasury issue. For example, in the oil futures market for delivery or settlement as of a certain date, no one investor or group of investors acting in concert, should be allowed to own beyond a certain percentage of the total.

There are a few more ways to cause information asymmetry and subsequent failure to ensure efficient financial market. Take for an example, information asymmetry is also created when the financial balance sheet of a corporation fails to provide a true picture of the corporation's conditions, for example, when the corporation has significant off-balance-sheet activities. Off-balance-sheet activities conducted by Enron Corporation were the principal cause of its collapse. Enron ultimately had to recognize on its balance sheet all the losses incurred in its off-balance-sheet activities. The venerable auditing firm Arthur Andersen was also dragged down along with Enron. It was the largest corporate bankruptcy in the United States before the failure of Lehman Brothers. By allowing off-balance-sheet activities, corporations are implicitly encouraged to take "hidden actions," and that further increases moral hazard. Such hidden actions enable the firm to take on excessive leverage and circumvent regulations on capital adequacy without the knowledge of its board of

directors, its shareholders, the public and even the regulatory agencies.

However, neither the U.S. Securities and Exchange Commission nor the U.S. Congress learnt the lessons of the failure of Enron Corporation and have continued to allow publicly listed companies to engage in off-balance-sheet activities. The Sarbanes-Oxley Act of the United States, which is supposed to prevent a recurrence of failures such as Enron, fails to address this most important issue at all, despite its many costly and intrusive provisions on corporate governance and auditing. Moreover, many of the world's largest banks, Citicorp, HSBC, UBS, etc. suffered huge losses in this financial crisis because of their off-balance-sheet activities in the form of "special investment vehicles (SIVs)" or "structured investment vehicles (also known as SIVs)," and ultimately had to take these off-balance-sheet activities onto their balance sheets and write off hundreds of billions (US$) of bad assets. This is one of the principal reasons for the high actual as opposed to the disclosed leverage of many financial institutions in the 2007-2009 crisis. Even sovereign governments such as Greece engaged in off-balance-sheet activities with the help of some financial institutions. Had off-balance-sheet activities been outlawed, Greece might still be in trouble, but the problems would have come to the surface earlier and it would not have been in such bad shape.

The regulators did not learn their lessons and allowed the same mistakes to be repeated in an even bigger way. If publicly listed companies were forbidden to engage in off-balance-sheet activities, all of these losses could have been avoided, and the securitized sub-prime mortgage loans would not have found such a ready group of purchasers. Moreover, a great deal of the shadow banking activities, for example, those involving the so-called auction-rate securities, had the implicit and explicit support of the major banks but were not regulated nor reflected as potential or contingent liabilities of the banks. The credit ratings provided by the credit rating agencies have lost much of their credibility and reliability, further aggravating the problem of information asymmetry. There are good reasons why credit ratings are not as reliable as they used to be. They will be discussed below.

Now let us return to the last way which magnify the regulatory failure issue, which is the failure to control moral hazard. It is well known that moral hazard on the part of the various market participants, if not appropriately recognized, discouraged and restrained, can play havoc with the markets and institutions and increase the overall risk to the financial sector and the entire economy. The regulators should develop rules and regulations and promote practices that discourage moral hazard on the part

of the different market participants in the financial sector. However, the regulators failed to do so—there was moral hazard everywhere, ranging from the originating mortgage lenders, credit rating agencies, purchasers of credit default swaps, asymmetric incentive compensation of executives of firms, especially financial institutions and hedge funds, and being "too big to fail," to name only a few. Each of these moral hazards will be discussed in turn.

The first form of Moral Hazard to be discussed is from those Originating Mortgage Lenders. The sub-prime mortgage loan crisis in the U.S., which was the beginning phase of the 2007-2009 global financial crisis, was possible in large part because of the failure of the regulators to control the moral hazard of the originating mortgage lenders. The originating lenders of sub-prime mortgage loans made residential mortgage loans to borrowers with no capacity for repayment of either interest or principal, based only on a vague hope of a possible appreciation of the price of the property in the future. From appendix 3, the Case-Shiller U.S. Home Price Index, which can be taken as a proxy for the asset price inflation in the U.S. residential housing market, is presented. The chart shows clearly that the U.S. Home Price Index began to rise in 1997 and managed to almost triple by 2006 when it reached its peak and began its decline. The Index has begun to stabilize somewhat recently, in part because of improved credit conditions for the housing market. But it is not expected to rise again anytime soon.

To view the issue more deeply, the originating lenders were allowed to sell these mortgage loans off through securitization with no residual liability. Thus, they had no incentive to make sure that the loan would perform—that the borrower was credit-worthy and had a means of repayment and that the collateral was worth its value. There was no attempt to check the borrower's credit-worthiness or the property's real value, since the mortgage loans would be sold to other investors without recourse to the originating lender. The volume of substandard mortgage loans, including both Alt-A and sub-prime loans, began growing in 2000 and by 2006 accounted for almost half of all mortgage loans made in the United States. The detailed trend can be found in appendix 4. It was these sub-prime mortgage loans that drove up the home prices successively in all segments of the market.

If the originating mortgage lending institution were required to retain some residual liability, e.g., a mandatory buy-back if the loan does not perform during the first three years of the life of the loan, or a holdback of 10 percent of the value of the mortgage loan for three years, contingent on loan performance, or a requirement to hold say 10

percent of the mortgage loan itself for the life of the loan, subordinated to the buyers/owners of the rest of the mortgage loan, it would have been much more careful and discriminating in making the loans and the sub-prime mortgage loan crisis could have been largely avoided. Provisions such as these have been introduced in the recently proposed reform of financial regulation in the United States. On top of that, securitization without any residual liability encourages moral hazard on the part of the originating mortgage lenders. Ultimately the purchasers of these sub-prime mortgage loan-backed securities could only rely on the ratings given by the credit rating agencies on these securities. The credit rating agencies also had no liability for mis-rating, but were compensated for providing ratings satisfactory to the issuers of these securities, creating yet another potential moral hazard.

The second form of Moral Hazard to be discussed arises from the aforementioned Credit Rating issue. It does not help that the credit rating agencies did not fulfill their function of properly assessing the risk of the sub-prime mortgage loan-backed securities, or for that matter, other similar asset-backed securities. One of the problems of credit rating agency nowadays is that it is paid by the firm it rates. If the firm does not like the rating it receives from that particular credit rating agency, it does not have to pay but can go on to another credit agency until it finds one that will give it a satisfactory rating. But credit rating agencies want and need to be paid, and may therefore compromise their judgment. Of course, this will lead to another form of moral hazard once again. Thus, published credit ratings are likely to be biased upward. These credit ratings can therefore sometimes be worse than worthless. The information embodied in the credit rating is unreliable and misleading and give investors and potential investors a false sense of security.

In any case, credit rating agencies are probably not very useful ex ante; because if they are really good at discriminating between the good and the bad securities as to their true relative riskiness, they should be in the asset management business, investing real money for clients and making a great deal more money for themselves in the process, and not in the credit rating business. Credit ratings of firms and securities are most often down-graded only after the whole World knows of their problems. The credibility of credit rating agencies is not helped by their not being able to “put their money where their mouths are. “Credit ratings are most typically used by asset managers to defend themselves when things turn sour—”The securities were rated AAA. What could I have done?” In as early as 2007 the interest rate spread between junk bonds (and sub-prime mortgage loan backed securities) and U.S. Treasury was less than 100 basis points. This should not have been possible because

no matter how clever one might be in financial engineering, someone has to wind up assuming the bad risks. The credit rating agencies might have contributed to this super-thin risk premium on junk bonds with their in-retrospect overly optimistic credit ratings.

The credit rating agencies need to be regulated, or better yet, reformed. In particular, the moral hazard can be greatly reduced if the firms being rated are not permitted to "shop" the rating, that is, to have a choice whether to pay the firm doing the rating depending on the result. One may need to develop a penalty regime for credit rating agencies so that they will have to pay for their over-rating mistakes, just like the auditors for their auditing mistakes. However, since credit rating agencies never have to put their money where their mouth is, added the fact that they do not suffer any financial loss if their ratings prove wrong, it is indeed difficult to design an incentive system for them to improve the accuracy and hence usefulness of their ratings. Ultimately, it may be more useful to require the underwriters of a bond issue to retain 5 or 10 percent of the entire bond issue in their own portfolio for the duration of the maturity of the bonds. This way, they will have an incentive to do proper due diligence and they will no longer be underwriting "junk". This should give potential investors in the bonds much more confidence than an AAA credit rating. However, this also means that the underwriters will need much more capital than before.

Excessive leverage encourages moral hazard and high-risk-taking because it reduces the potential pain that may result from a loss. If a firm with net equity funds of $1 million operates with a debt-to-equity ratio of 50 to 1, after interest payments, a 10% return on assets translates into a profit of $5 million and a 500% return on equity; but a -10% return, which means a loss of $5 million, will only result in a loss of $1 million to the shareholders of the firm. Of course, the firm will have negative net worth and be in bankruptcy. Thus, controlling excessive leverage also reduces moral hazard. However, moral hazard, that is, "hidden action," and lack of full information disclosure, also helps to enable excessive leverage. For example, keeping potential liabilities off the balance sheet of a financial institution enables that institution to have a much higher actual leverage than otherwise allowed by the regulatory agencies.

The third form of Moral Hazard to be discussed is associated with Credit Default Swaps. Credit default swaps (CDSs) are new financial instruments introduced in the late 1990s that are totally unregulated. In principle, they are insurance contracts on the bonds, the outstanding obligations, of a firm. The CDSs pay off in the event there is a default on the bonds by the issuing firm. As indicated above, a fundamental

principle of insurance is that the insured must have an insurable interest. Otherwise it would encourage moral hazard. Moreover, to discourage moral hazard, insurance should be less than full.

It is well known that insurance is subject to moral hazard, that is, the insured may for other reasons undertake "hidden action" to trigger the insurance pay-off. For example, a person may set fire to his or her own house, or to someone else's house on which he or she has taken out fire insurance, to collect the insurance proceeds. Excessive insurance or over-insurance, that is, insuring a property for more than its true market value, is an open invitation to the insured to trigger the insurance pay-off, as the insured can benefit more from the insurance pay-off than from maintaining the status quo. Nevertheless, the insurance companies have learned from bitter past experience that this may happen, and generally will insure only those who have an insurable interest, for example, they will only sell insurance to the actual owner of a house, or to the bank with the mortgage loan, but not to others, and often to offer only less-than-full market-value insurance (the insurance payoff is always with reference to the current market value). Less than full market-value insurance amounts to a form of co-payment and can discourage moral hazard. For example, if the insured of a house can only recover from insurance proceeds less than the full market value and hence will have no incentive to burn down his or her own house to collect the insurance, and will in addition exercise due care for the house to prevent the occurrence of a fire.

Thus, for example, it is reasonable for someone who owns Lehman Brothers bonds, or who is a contractor or supplier owed money by Lehman Brothers, to purchase a CDS from American International Group (AIG, an insurance company) up to the amount outstanding. But it is not reasonable for anyone else with no direct exposure to Lehman Brothers, especially if this person has the power to influence whether Lehman Brothers would go into bankruptcy, to purchase CDSs on Lehman Brothers, or to purchase an amount of CDS greater than the actual financial exposure. However, the insurance companies that sold CDSs lost sight of the fact that they were selling insurance. They thought they were just taking bets, like Ladbrokes. Indiscriminate sale of credit default swaps (CDSs) is the principal source of AIG's problems.

To better illustrated the problematic nature of CDSs, CDSs is like allowing strangers to buy insurance on someone's house, creating an incentive for them to set fire to it and collect the insurance. Another metaphor would be a pirate buying insurance on

someone else's ship from Lloyds and then sinking it to collect the insurance. This is the well known problem of moral hazard in insurance that every insurance company should know and avoid. But AIG sold many times more CDSs on Lehman Brothers than Lehman Brothers had bonds outstanding (reportedly much more than ten times). Many purchasers of such CDSs were simply gambling on a Lehman Brothers failure. It would have been better if these purchasers had no influence on whether Lehman Brothers would go under or not. Or if AIG does not take a position itself, merely squaring those who bet that Lehman Brothers would fail with those who bet Lehman Brothers would survive, letting the market determine the odds. Unfortunately, that is not even the whole picture. AIG took on the bets itself, and many of the purchasers of the CDSs had the power to help force Lehman Brothers under, for example, by massively shorting its stocks or bonds, so that Lehman Brothers would be effectively prevented from accessing the capital and credit markets. The total amount of all CDSs outstanding has been estimated to be approximately US$50 trillion, relative to the total amount of the underlying bonds outstanding of only one-tenth of US$50 trillion. In other words, the insurance companies collectively sold US$50 trillion worth of insurance on bonds that are only worth US$5 trillion.

In retrospect, even considered as insurance, the CDSs on Lehman Brothers were not priced correctly. The price of the CDSs did not reflect adequately the probability of its failure, given its high degree of leverage and potential liabilities, and moreover did not take into account adverse selection—people buy insurance only because they have reason to expect that there is a high probability that they will be able to collect the insurance.

Furthermore, the insurance industry is normally regulated by the government to ensure that the insurance companies have adequate reserves to pay the claims if and when they arise. In the case of CDSs, adequate insurance reserves were never properly established. That is a cause of why AIG is in so much trouble today. One reason why the CDSs were not regulated as insurance is because the U.S. Congress passed legislation in the late 1990s, declaring that CDSs were neither insurance nor gaming, thus effectively enabling CDSs to escape possible government regulatory supervision altogether. In retrospect, the availability of CDSs on Lehman Brothers actually increased the probability of failure of Lehman Brothers rather than decreased it, thus increasing rather than decreasing the overall riskiness of the financial sector and the economy. It is therefore not true that financial derivatives reduce risks. CDSs, if sold indiscriminately, can provide the instruments for a form of predatory speculation—hedge funds and other investors seek relatively weak firms, buy their

CDSs and drive them into bankruptcy by selling short their bonds and stocks.

After looking at CDOs, we will now turn to the fourth form of moral hazard, which is known as Asymmetric Incentive Compensation. The incentive compensation schemes at most U.S. corporations and at many investment funds are asymmetric in the sense that the executive/asset manager stands to reap huge rewards tied to the degree of success over and above a certain benchmark (through stock options and "carry interests") but does not share in the losses (beyond possibly losing his or her job). These stock options and "carry interests", which allow executives and asset managers to share the upside but not the downside, also create moral hazard and encourage corporate executives and asset managers to take excessive risks. Stock options, which provide only upside but no downside for the option grantees, are ideal for venture capital and for start-ups because these are inherently high-risk ventures but with no real down-side that is not already expected and will be shared by investors and executives alike. However, stock options may not be appropriate for mature enterprises because there may be a significant downside for the owners and shareholders of the firm which may not be shared by the executives granted the stock options.

In more realistic world, the high management fees, including the so-called "carry interests," charged by the managers of investment funds, have the effect of causing these asset managers to take excessive risks because they would share a significant proportion of the upside but not the downside. Typically the fee structure of investment funds (including hedge funds and private equity funds) is 2 plus 20—2 percent of the value of assets under management plus 20% of the returns above a certain threshold, but the carry interest can go all the way up to as high as 44 percent. This incentive scheme encourages risk-taking on the part of the asset managers because they stand to gain significantly if they make it big but lose very little if their investment strategies fail. "Heads I win, tails you lose" is neither effective nor efficient as a method of incentive compensation for corporate executives and asset managers—it greatly encourages moral hazard and reckless behavior. To be fair, there are asset managers who voluntarily set a ceiling to the upside of their fees, thus reducing their own incentive to take excessive risks.

Moreover, stock options are frequently based on short-term performance of the common stock in the stock market. Incentive compensation of senior executives should not be based on short-term results but instead should be based on long-term performance of the corporation, including ideally the performance over a period after

their retirement from the corporation. In this way they will have the incentive not to pursue quick short-term profits but to invest for long-term sustainable earnings as well as to help choose their successors carefully. An alternative is to require the executives/managers to own outright shares in the corporation or the investment fund that constitute a high proportion of their personal net worth, through recourse loans if necessary. That will help align their interests with those of the ordinary shareholders/investors and discourage moral hazard and excessive risk-taking.

There is a fifth form of moral hazard, which is the renowned "too big to fail" problem. Implicit guarantees of banks and financial institutions considered "too big to fail" by governments encourage moral hazard on the part of the large banks and financial institutions. They may take excessive risks with the belief that they will not fail and will not be allowed by the governments to fail. Nevertheless, in any circumstances, no firm, financial or otherwise, should be allowed to become too big to fail. For example, if a bank fails, the depositors should be protected insofar as there is deposit insurance. The secured creditors are compensated in whole or in part by the collateral they already hold. The other creditors presumably have bought the debt of the bank on their own free will, can take the losses. And the shareholders, who will be in the last position, may wind up with nothing. But there is no reason for the bank not to continue operating, under new management and ownership.

In normal circumstances, a firm is "too big to fail" only if it is heavily leveraged. If it is not heavily leveraged, it can be simply allowed to fail, given that the shareholders will lose but another firm or investor can take over its functions. It is the excessive leverage of a bank that may make it too big to fail—it may owe other banks and financial institutions, bondholders and other creditors too much money. If excessive leverage is strictly limited, and the diversified exposure requirement is strictly enforced, that is, a bank cannot be overly exposed to a given customer with a group considered as a single customer, no bank should be able to become too big to fail. The United States, the largest provider of international liquidity, is itself in crisis, but it is really "too big to fail." Up to now we have grossly covered the five forms of moral hazards.

Now we shall go back to our primitive discussion of the fourth cause of Global Financial Crisis. It is known as defects in Institutional Design. In general, there are four areas of defects in the Institutional Design. The first area is the locus of regulation and supervision; the second area is the financial accounting standards; the third area is the form of securitization of loans; and the last area is the specialization

of banks (or the lack thereof).

We will first discuss the defect in the locus of regulation and supervision. There is no universal agreement on how banks and financial institutions should be regulated and supervised. There are two separate issues: first, whether commercial banks and commercial banking activities are better regulated and supervised by the central bank or by a separate agency and second, whether all banking activities of any kind including commercial banking, investment banking, securities firms and markets, and insurance, should be regulated and supervised by a single, unified regulatory agency. However, the concept of single regulatory agency does not always come into success. To illustrate this, the regulation and supervision of commercial banks by a financial services regulatory agency outside of the central bank has not proved to be a success in the United Kingdom. This is because the central bank has valuable, continuous, real-time information on the state of the commercial banks through its funds clearing and settlement system that is not readily apparent in periodic audits carried out by an independent regulatory agency, and that ultimately only the central bank is able to assume the crucial role of "the lender of last resort." In the United Kingdom, the responsibility of regulating and supervising the commercial banks has been given back to a unit within the Bank of England, the central bank after the global financial crisis of 2007-2009.

Meanwhile, In the United States, regulation and supervision of banks are still not unified, notwithstanding the global financial crisis. The responsibilities are divided among the Federal Reserve Board, the Federal Deposit Insurance Corporation, and the Comptroller of Currency for national banks and the Banking Commissioners of the 50 individual states. The Federal Reserve Board has de facto, if not de jure, assumed the responsibility of the regulation and supervision of the major commercial banks. Such diffusion and division of responsibilities have prevented the regulators and supervisors from acting decisively in a timely manner when crises arise. Moreover, the regulation and supervision of non-deposit-taking investment banks, securities firms and insurance companies are frequently scattered among different agencies with little formal coordination. This may work in a Glass-Stegall environment but is woefully inadequate when the Glass-Stegall Act no longer applies, that is, when banks or bank-holding-companies can enter the full line of financial service businesses.

Next we shall discuss the defect in the Financial Accounting Standards. The Financial Accounting Standards adopted in the developed economies, especially in the United States, have prevented the early identification of the excessive leverage and have

exacerbated the global financial crisis once it began. First, off-balance-sheet activities of banks as well as other publicly listed corporations are a major cause of the financial crisis. They should be prohibited outright except under the most special circumstances and only with explicit prior written approval of the regulators/supervisors/auditors. All contingent liabilities and significant exposures should be fully disclosed. Second, mark-to-market rules may exacerbate a crisis because of the uncertainty and volatility in the financial markets. By marking to market, a financial institution may fall short of the capital requirements and be forced to sell assets and contract. Selling assets and contraction may drive asset prices lower, requiring further marking down to market, which in turn may lead to further selling of assets and contraction. It should be possible to suspend mark-to-market rules when market conditions are too volatile and the market prices fail to reflect long-term underlying values.

In addition to this, mark-to-market rules may also create problems and confuse investors when valuation is done not with reference to arms-length open market transactions but through an untested model. As the value of financial derivatives, especially customized ones, rises as a proportion of total assets, their precise valuation will have a material impact on the balance sheet of the firm. It should be noted that Mark-to-market rules should not be applied to long-term investment, regardless of whether they result in an accounting gain or loss—for example, a long-term direct investment by IBM Corporation in Japan should not have to be written up and down based on the current end-of-quarter Yen-Dollar exchange rate. When market prices are volatile, marking long-term assets to reflect short-term price fluctuations misleads rather than informs the public investors. Moreover, they may lead to either false alarms or a false sense of security. This is similar to the distinction between the accounting of hold-for-trade and hold-for-investment assets. Therefore, firms should be given a one-off choice on whether to adopt the mark-to-market rule on any given investment, a choice which should be left unchanged for the life of the investment. Apparently such a change in the rules has already taken effect in some jurisdictions since 2008.

Third, quarterly reporting imposes a significant cost to publicly listed firms but the substantive information content of quarterly reports is generally very low compared to annual and semi-annual reports. Quarterly reporting does nothing other than putting pressure on executives to focus on short-term performance, which may actually work against the interests of the shareholders. In any case, an investor always has a choice not to invest in companies that do not report quarterly. Quarterly reporting should

therefore be made optional rather than mandatory for publicly listed companies. In short, off-balance sheet activities, problem with mark-to-market rule and quarterly reporting all contribute to the defect in the Financial Accounting Standards.

After going through Financial Accounting Standards, we are turning the focus to the third defect of institutional design, the Form of Securitization of Loans. Long-term fixed-rate loans, especially home mortgage loans, need to be securitized and sold to long-term investors because commercial banks do not have sufficient long-term fixed-rate deposits to meet the demand for such long-term fixed-rate loans. If commercial banks make and keep long-term fixed-rate loans, they will have a maturity mismatch in their assets and liabilities which may eventually result in a similar debacle as the savings and loan associations in the early 1980s. The sub-prime mortgage loan crisis in the U.S. arose not so much because of securitisation of the home mortgage loans per se, but rather because these mortgage loans was not securitized in the right way. As a remark, this is in addition to the moral hazard of the originating lender problem discussed earlier in this paper.

There are two routes to the securitization of long-term loans--principally long-term (up to 35 years) fixed-rate owner-occupied home loans backed by first mortgages—which we can call direct securitization and indirect securitization respectively.

Direct securitization takes the form of long-term bonds issued to the public by a financial institution against a specific package of qualified long-term loans (assets) meeting certain specifications as collateral. The loans (assets) are then owned by the purchasers of these bonds, who will receive the scheduled payments of interest on and repayments of the principals of these loans in the form of bond interest and principal repayments. The bonds may also be guaranteed by a financial institution. In the case of the U.S., the issuing and/or guaranteeing financial institution is often either Fannie Mae or Freddie Mac, both quasi-sovereign financial institutions. The bondholders, in the absence of explicit guarantees, primarily look to the specific package of loans as the underlying collateral.

Indirect securitization takes the form of long-term bonds issued directly to the public by a financial institution, the primary business of which is to purchase qualified long-term loans meeting certain specifications with the maturities of the bonds matching the maturity of the loans. The purchasers of the bonds look primarily to the financial institution for the payment of bond interest and the repayment of the bond

principal. The bonds themselves are not specifically collateralized even though the long-term loans are part of the overall assets owned by the financial institution.

The financial institution uses the proceeds from the bonds to purchase these qualified loans from originating mortgage lenders. The loans are owned by the financial institution. The borrowers pay the interest and any repayment of principal on the loans to the financial institution, sometimes through the originating lenders who may be retained as servicing agents for a fee, and the financial institution pays the bondholders, regardless of whether it has been paid by the borrowers. In most instances, the mortgage loans financed through securitization are for owner-occupied residential housing, with restrictions on size and maximum loan value, among other requirements. Owner-occupied residential mortgage loans are different from other mortgage loans because their default rate is much lower than that of non-owner-occupied residential mortgage loans taken out by investors and speculators. It is therefore possible, under indirect securitization, for the financial institution issuing the bonds to bear the risks of loan defaults. It is justifiable to have a social policy favoring owner-occupied home-ownership but not favoring investment in or speculation on non-owner-occupied residential property on the grounds that it promotes social harmony, security and stability.

There are several advantages of indirect securitization over direct securitization.
First, the bonds issued will have quasi-sovereign status if the financial institution is established as a state policy bank which was originally the case for Fannie Mae and Freddie Mac and will therefore be able to carry a lower rate of interest. The lower rate of interest will also benefit the borrowers of the owner-occupied residential mortgage loans.

Second, there is pooling of the risks of default on the mortgage loans under indirect securitization, so that the risks are spread and shared by purchasers of successive issues of bonds of the bank, whereas under direct securitization, there is no pooling across successive packages of loans. The actual risks and returns to purchasers of directly securitized mortgage-loan-backed securities can therefore vary significantly from package to package.

Third, if the originating mortgage lenders are required to assume a residual liability of say between 5 and 10 percent of the principal of the mortgage loans they originate (which is good for controlling moral hazard), it is much easier to enforce with the financial institution as the purchaser of the mortgage loans rather than a group of bond

investors.

Fourth, in the event of a default by one or more borrowers on their mortgage loans, since the mortgage loans are owned directly by the financial institution, it is much easier to have a work-out between the borrower and the bank, through the servicing agent, under indirect securitization. Under direct securitization, it is much more difficult and costly for the current owners of the bonds to negotiate a work-out with the individual non-performing borrowers. While direct securitization per se is not itself to be blamed for the crisis, it greatly complicates the resolution and prolongs the negative impacts of the crisis. Many non-performing mortgage loans in the U.S. remain to be worked out between the borrowers and the current owners of the mortgage loans.

Fifth, under indirect securitization, there will also be greatly reduced transactions costs and there is no need to rely on credit rating agencies to rate each specific package of mortgage loans or on investment banks to package and promote and market the mortgage loans to the investing public.

Sixth, for the investors and potential investors, the market for these indirectly mortgage-backed bonds will be much bigger as well as more liquid.

One possible complication is whether there should be a pre-payment penalty for these mortgage loans in order to keep the transactions cost and hence the rate of interest low, but the same problem exists whether the mortgage loans are directly or indirectly securitized. The only disadvantage of indirect securitization is that the investment banks will no longer be able to earn fat fees for securitizing these mortgage loans. This would conclude the discussion of securitization of loan.

Next, we shall look into the fourth defect of institution design, the specialization of banks. Should banks that accept retail deposits from the general public be allowed to engage in proprietary trading in securities for their own accounts? This issue was considered in the recent discussion of financial reform legislation in the United States in connection with the "Volcker Rule." In principle, it should be fine if the proprietary trading is done with a bank's own resources and the amount at risk is subtracted from the bank's capital as far as the calculation of the bank's capital adequacy is concerned. The depositors' funds are not to be used at all in the proprietary trading. The problem arises when there is potential for a conflict of interest, for example, the bank's proprietary trading unit selling a security that the

bank's trust or private banking department is buying on behalf of a bank customer. There is also conflict of interest when there is illegal use of information on the bank's customers by the bank's proprietary trading unit in its trading. Even though there is supposed to be a "Chinese Wall" separating the proprietary trading unit from the commercial banking unit but experience tells us that these "Chinese Walls" can become very porous.

The same consideration applies to a bank conducting both investment banking and commercial banking activities at the same time. Conflicts of interest can easily arise. For example, the investment banking unit may try to raise capital for a corporation to repay a loan to the commercial banking unit without fully disclosing the true conditions of the corporation. For another example, the commercial banking unit may extend a loan to enable a customer to buy securities being marketed by the investment banking unit. These problems can be avoided if banks specialize. But the most compelling argument is that there does not seem to be any real synergy between investment banking and commercial banking if all the laws and regulations on avoidance of potential conflict of interest and sharing of information are properly followed. So why put them together?

While many banks are attempting to become whole banks or universal banks, one should also consider the establishment of specialized banks with special missions. These banks can be regulated and supervised differently from the other banks.
For example, banks established to promote a particular government policy, such as Fannie Mae and Freddie Mac in the United States, should not be privatized, even in part. This is because once a policy bank is privatized, even in part, the private shareholders will demand short-term profits and returns which may not be consistent with the mandate and mission of the policy bank. If Fannie Mae and Freddie Mac were not publicly listed, they would not have been subject to the pressure of shareholders demanding a financial return, and might therefore have been more prudent in their expansion and acquisition of loans. This might have helped avert the financial crisis or at least reduce its intensity. The senior management of such policy banks should also be compensated differently from those of private, for-profit, banks so as to reduce the incentive to take excessive risks.

It is also possible to envisage the emergence of a new type of "narrow" bank, or "transactions" only bank, that Prof. James Tobin, Nobel Laureate in Economic Sciences, once advocated. Such a bank only takes deposits, but does not make loans. It can offer its customers a debit card but not a credit card. It offers interest-bearing

current deposit accounts as well as term deposit accounts. It invests its deposits entirely in credit risk-free central government securities of asset-liability maturity mismatch risk-free appropriately matching maturities. Even deposit insurance should not be required for this type of bank. As such a bank has virtually no risk, it should therefore be subject to only minimal capital and reserve requirements. Its assets are entirely invested in central government securities and hence will also have the highest possible liquidity. So perhaps a 2% capital requirement and a 2% reserve requirement should be sufficient. It may have to meet a liquidity requirement based on the volume of transactions cleared every day.

The postal savings banks of many countries can be quickly transformed into such "transactions only" banks by basically allowing the use of cheques and electronic transfers of funds on their existing accounts. The "transactions only" banks can provide a secure depository institution and an efficient, low-cost transactions account for the average citizen. Such banks, appropriately regulated and supervised, should be immune from any systemic crisis.

3. What Caused the European Sovereign Debt Crisis?

After looking into the cause of 2007-2009 Global Financial Crisis, we will now turn our focus to the cause of European Sovereign Debt Crisis. The source of the European sovereign debt crisis is the accumulation of public debt, incurred to support a continuing series of government budget deficits, to a level that is beyond the servicing capacity of the individual country. Moreover, it is important to make a distinction between internal debt and external debt. Internal debt is debt owed by a country to its own citizens and firms. External debt is debt owed by a country to non-nationals.

If the public debt were mostly internal, such as in Japan, which has a public debt to GDP ratio in excess of 200 percent, the problem is manageable. Internal debt is a little like debt within the same family. The son borrows from the father. When the father demands repayment from the son, the son goes to the mother and asks for money to repay the father. The mother asks the father for money. Father gives money to mother, mother gives money to son, and son repays the father. This completes the circle. This arrangement can continue more or less indefinitely, especially if the rate of interest is low, as long as the money stays within the family.
However, if the debt is external to the family, this recycling breaks down. Debt repayment then becomes a real burden for the family.

Analogous to the situation in a family, at a national level, as long as the debt is internal to a country, the government can issue new debt to its citizens and firms and repay the old debt with the proceeds. This process can continue indefinitely if the domestic citizens and firms have confidence in the government, and especially if the nominal interest rate is low. Alternatively, it can also increase taxes and repay the old debt with the additional taxes collected. However, this process breaks down if the debt is held externally, by non-nationals. In this case, net real resources must flow out of the country.

Unfortunately, in the case of Greece, much of the debt is external. The situation is therefore not sustainable. Unlike the United States, which can increase the supply of U.S. Dollars at will, the other option of solving the problem through printing more money is not available to Greece, because it does not have the authority to issue Euros. The solution for Greece is therefore limited to severe austerity or outright default which literally implies exit from the European Union. It does not help that there are many speculators speculating on an eventual Greek default. The indiscriminate sale of credit default swaps (CDSs) on Greek debt, and for that matter on the debts of other members of the Euro Zone, to speculators who do not own the underlying bonds, exacerbated an already bad situation. The Euro Zone authorities should probably have stepped in more decisively and forcefully to maintain confidence in the Euro and Euro Zone debt. Confidence, once lost, is extremely difficult and costly to restore.

4. What Lessons Can We Learn?

After seeing the causes, it may be also relevant for us to derive some useful lessons from these two largest financial crises in the recent decades. There are in total 12 lessons to learn.

The first lesson is to implement appropriate monetary policy for a country. A permanent policy of easy money will create asset price bubbles and fuel inflation, especially in a financially mature economy. Rates of interest, especially lending rates, should be kept positive in real terms most of the time. However, in an economy without a stock or security market, the total value of transactions, for a given level of real GDP, is lower than the total value of transactions in an economy in which there are the financial transactions of buying and selling stocks and securities in addition to the real transactions. As an economy undergoes financial deepening, the rate of growth of money supply will have to exceed the rate of growth of real GDP even as the rate of inflation of the prices of goods and services remains near zero.

The second lesson is to restrain irrational exuberance. The financial regulatory agencies should monitor asset (securities and property) markets and take appropriate measures to prevent asset price bubbles from becoming too big.
Instruments include controlling the loan to equity ratios and loan ceilings in real estate markets and margin requirements in stock markets. Other instruments include the pricing, quantity and timing policies of land sales and the pace of initial public offerings as well as more opportunistic additional public offering through the use of "shelf registration." Stamp, transaction and capital gains taxes can also play a role in reducing the expected net after-tax rate of return on speculative investments. The fundamental idea is to try to influence and modify long-term asset price expectations. If additional supplies are expected to be forthcoming in the future, the asset price bubble cannot become too big.

The third lesson is the essence of regulation. Markets do not and cannot function well automatically on their own. The incentives are too strong for firms, if left alone, to try to monopolize markets or to otherwise benefit themselves at the expense of other market participants such as insider trading, front running, etc. Excessive leverage cannot be left to self-regulation. Information asymmetry can be reduced only through regulatory measures as there is no reason for an investor to disclose information voluntarily to one's potential competitors in the financial markets. Moral hazard must also be explicitly discouraged and controlled. Strengthened financial regulation and supervision is essential to avoid a recurrence of another financial crisis of similar magnitude to the current global financial crisis.

The fourth lesson is to strengthen financial regulation and supervision. If any bank or financial institution cuts corners, its costs will be lower and its profits will be higher. If the regulator allows a bank or financial institution to cut corners, other banks will be forced to follow in order to compete. Thus, in order to reduce systemic risk, financial regulation and supervision must be uniformly enforced. It is most important for the regulator not to allow bad practices gradually become industry-wide standard practices. Regulations must be clear and enforcement must be strict. Otherwise all the grey areas will appear white in no time. The regulatory agencies should always remember that their primary responsibility is the protection of consumers (depositors and borrowers), creditors and investors, ensuring the fairness and efficiency of the markets, and the security and stability of the financial system as a whole. It is not their responsibility to assure the profitability of the firms they are charged to regulate. Meanwhile, the actual practice of financial regulation and

supervision strengthening consists of three ways, namely, to restrict excessive leverage, to ensure competitiveness of markets and to control moral hazard.

We will first discuss the measures to restrict excessive leverage. Because of the negative externalities generated by excessive leverage, there is public interest in controlling the degree of leverage of firms, especially financial institutions. Excessive leverage should therefore be tightly controlled. Capital adequacy should be strictly monitored. A firm is "too big to fail" only if it is heavily leveraged. If it is not heavily leveraged, it can be simply allowed to fail, given that the shareholders will lose but another firm or investor can take over its functions. There must be restrictions on the degree of leverage in the economy, especially for the financial sector. Limits on leverage are easy to enforce and difficult to circumvent provided that off-balance-sheet activities are not allowed.

Next we will discuss how to ensure a competitive market. The regulatory and supervisory agencies should ensure competitiveness of the financial markets by reducing information asymmetry, increasing disclosure and transparency, and restricting the dominant positions of market participants.

Last but not least the regulatory bodies should reduce information asymmetry as much as possible. The public will be much better informed if off-balance-sheet activities are not allowed for publicly listed firms, including all financial institutions. This will also reduce leverage, improve corporate governance, and avoid negative surprises. The practice of "shadow banking," which leads to undisclosed "excessive leverage" and increases significant systemic uncertainty should be prohibited—the banks should either make a direct loan to a corporation, or provide an explicit guarantee on the bonds and notes issued by the corporation, all of which will be explicitly on the balance sheet of the Bank. At the current stage of financial development in many developing economies, allowing "shadow banking" will greatly increase systemic risk in these economies.

Now we go back to the fifth lesson to learn from these crises, which is the enhancement of disclosure and transparency. The introduction of the many new financial instruments has created additional problems for the regulators—instead of reducing and sharing risks, they concentrate and magnify risks and increase overall systemic risk. Many of these complex and non-standard financial instruments are priced and traded only privately (e.g., accumulators) and not on open public markets and exchanges. There is a crying need for simplification and standardization of

financial derivatives and for them to be traded only on established and publicly regulated open exchanges. This assures some degree of transparency and fairer pricing, safeguards against market manipulation, and helps to reduce counter-party and systemic risks.

The sixth lesson is to restrict dominant positions. Dominant positions, for example, over 5% share of any specific traded financial instrument, in any financial markets should be required to be disclosed, as well as any subsequent increase or decrease in such positions. In these instances, the final beneficial owners should be disclosed to avoid the use of multiple names and accounts to circumvent the disclosure requirement. For certain instruments, there should be an upper limit to the market share that can be held by a single person or entity.

The seventh lesson is to control moral hazard. Moral hazard should be controlled and discouraged by the regulators, so that any potential gain is accompanied by potential pain, reducing excessive risk-taking on the part of all market participants. This includes the regulation and supervision of the originating mortgage lenders, credit rating agencies, insurance companies and their products and business practices as well as the degree of leverage of firms, including financial institutions and hedge funds. The goal is to reduce the incentive to take "hidden actions" and/or excessive risks. Besides, Credit Default Swaps (CDSs) should be sold to only bona fide owners of the underlying bonds. And once the original owners sell the bonds, they should not be allowed to keep the CDSs—they will either have to be sold, with the bonds, to the new buyer, or they should be returned to the insurance company for a refund, if any.

The eighth lesson is to impose more symmetric incentives for corporate employees. Incentive compensation of senior executives of firms and asset managers should be based on long-term performance of the corporation/fund, including the performance over a period after their retirement from management. Stock options which provide only short-term upside but no down-side should be used very sparingly. Instead, senior executives/managers should be encouraged to own equity, through recourse loans if necessary, in the corporations/funds they manage.

The ninth lesson is to focus on long –term performance. Corporate management and public investors should be encouraged to focus on long-term rather than short-term performance. Incentive compensation based on short-term results has led firms and managers to pursue quick short-term profits rather than invest for long-term sustainable earnings. Financial engineering can create quick short-term profits but

often fail to add any lasting real value in terms of GDP and employment.

The tenth lesson is not to allow "too big to fail" problem for any firms. It is the excessive leverage of a firm that may make it too big to fail—it may owe other banks and financial institutions too much money. If excessive leverage is curbed, no firm, including financial institution, should be able to become too big to fail.

The eleventh lesson is to improve the institutional design. The risk of systemic failure of the financial sector can be reduced by appropriate choices of features of its institutional design. Here we consider three major areas where improvement is possible: The first area is the locus of regulation and supervision; the second area is the financial accounting standards; the third area is the form of securitization of loans.

For the locus of regulation and supervision, regulation and supervision of retail deposit-taking commercial banks are best lodged in a division within the central bank. In any case, close coordination between the central bank and any separate banking regulatory and supervisory agency is essential. While there are calls for the return of the Glass-Stegall Act in the United States, it does not appear likely at this juncture. However, with whole or universal banking, it is necessary that the different regulatory and supervisory agencies—banking, securities and insurance—examine financial institutions jointly to deter the shifting of assets from one unit to another in order to avoid regulatory and supervisory scrutiny and worse, to hide the true state of affairs. Unless there is a determination to bring back Glass-Stegall Act or its equivalent, unified regulation and supervision is absolutely essential and urgent.

For the second area of reform, which is on the financial accounting standards, the first major regulatory reform should be the prohibition of off-balance-sheet activities of banks as well as other publicly listed corporations, except under the most special circumstances. Second, mark-to-market rules should be evaluated as to under what circumstances they should be mandatory and under what circumstances they can be optional. The objective is to present as true a picture as possible and to avoid misleading the investors, especially at times of irrational exuberance or irrational panic. Third, quarterly reporting should be made optional for publicly listed firms. Investors can decide whether they will invest in firms that do not report quarterly.

Thirdly, for the methods of securitization as an area of institutional reform, Indirect securitization is the preferred route to go to finance long-term fixed-interest-rate residential mortgage loans. The "Volcker Rule" protects the interests of the retail

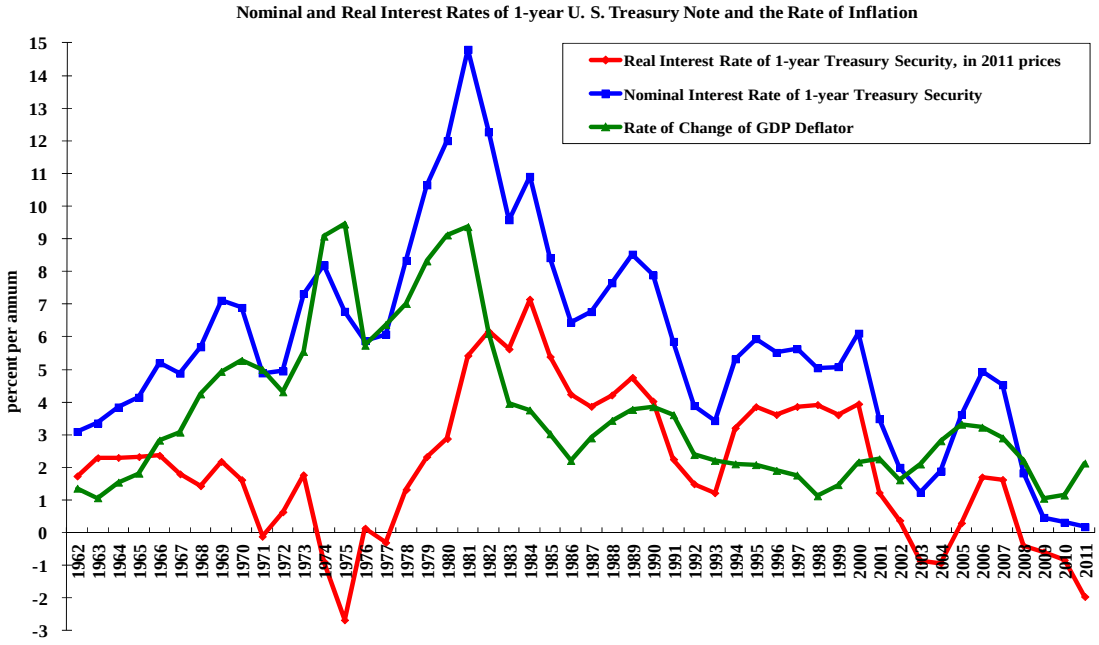
depositors and should be adopted. Policy banks should not be privatised, even in part, and in particular should not be publicly listed, so as to avoid shareholders' pressure for quick returns and potential conflict between the interests of the shareholders and the policy bank's public policy mission.

We go back to the twelfth, and the last lesson learnt from the crisis, which is dedicated to the European Sovereign Debt Crisis. Early and decisive action is necessary in any financial crisis. The most important objective is to maintain confidence and promote positive expectations of the future. Meanwhile, expectations, which are often self-fulfilling, are difficult to change. Changing negative expectations to positive expectations require decisive action with a large impact. For example, the mere announcement of the four trillion Yuan economic stimulus program rolled out by the Chinese Government in November of 2008 helped to maintain confidence and prevented expectations from becoming overly negative. Also, fiscal contraction at a time of recession feeds negative expectations about the future. It is better to have a short-term fiscal expansion to promote the resumption of growth, coupled with a longer-term plan for achieving fiscal balance in the long run.

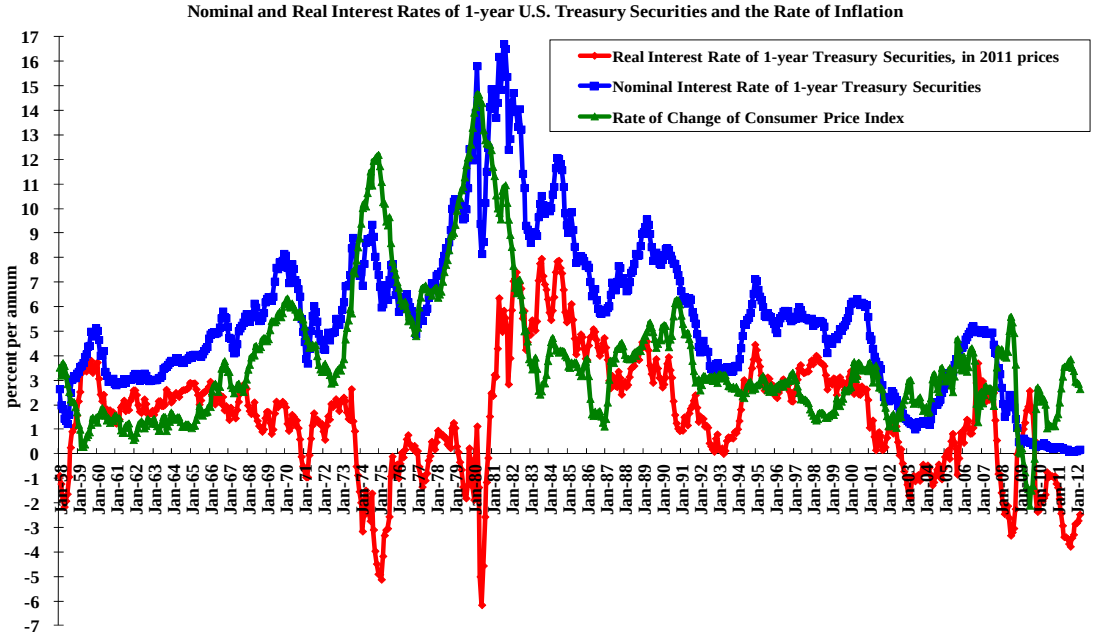
5. Concluding Remarks

In order to avoid future financial crises and to reduce their potential intensity if they occur, strengthened regulation and supervision as well as improving the institutional design are necessary. Nations should try to put their fiscal house in order for the long term but promoting growth and employment should take precedence in a serious recession.

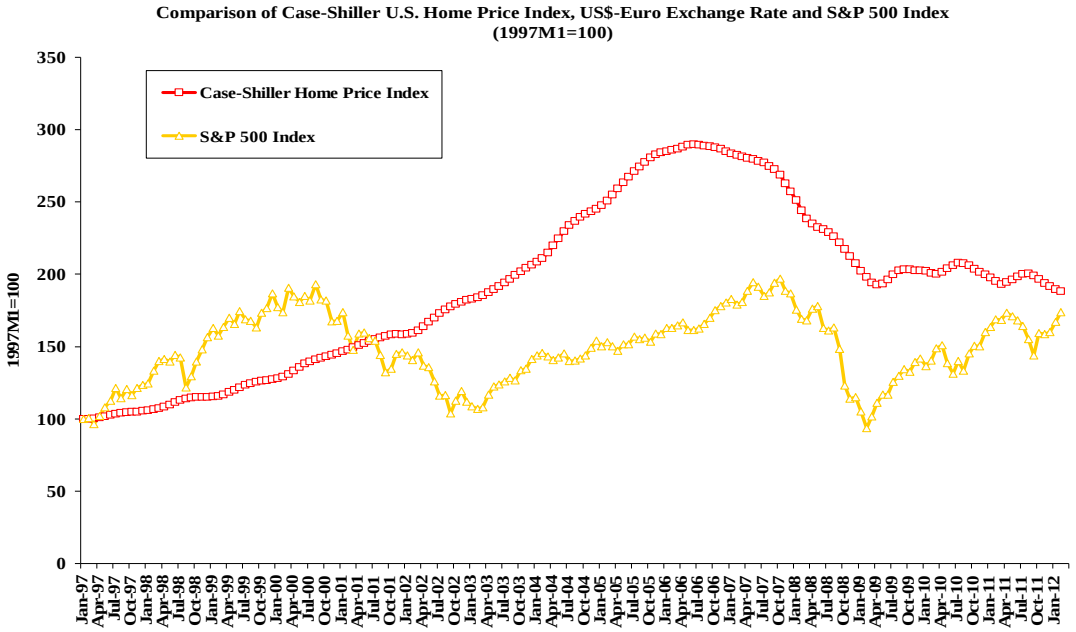
Appendix 1: Nominal and Real Interest Rates of 1-year U.S. Treasury Note and U.S. GDP Deflator



Appendix 2: Nominal and Real Interest Rates of 1-year U.S. Treasury Note and U.S. CPI Index



Appendix 3: Case-Shiller U.S. Home Price Index and the S&P 500 Index, 1997M1=100



Appendix 4: Growth in U.S. Mortgage Originations: from John Kiff and Paul Mills (2007)