Making Markets More Robust*

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We have experienced the most severe global financial crisis since the Great Depression. The sharp, synchronized falloff of real economic activity that occurred in the fall of 2008 is unprecedented. Reform of regulatory policies and of market practices are necessary to reduce the likelihood of such events. While we are still learning lessons from this crisis, I will suggest some paths for reform that can help to make markets more robust going forward.

The goal of such reforms would be to support sustainable long run economic growth, consistent with solid and sensible protection of consumers. Reforms should focus on reducing the likelihood that a ripple caused by trouble at or failure of one institution turns into a tidal wave that can affect the financial system and the economy more broadly – the classic systemic risk problem. To mitigate systemic risk in the system, reducing procyclicality of regulation and market practices is a high priority. Squarely facing and mitigating “too big to fail” and “too interconnected to fail” problems is another important theme. The “too big” and “too interconnected” problems arise from weaknesses in the market and legal infrastructure, for instance, inefficiencies and uncertainties in bankruptcy codes and procedures that can lead creditors, customers and counterparties to “run” on an institution, as I will describe below. Another key theme is that the “originate to distribute” model and securitization put heavy requirements on the market and legal infrastructure. Ensuring accurate and timely information is provided to market participants and supervisors is crucial for avoiding concentrations of risk and
the loss of confidence that comes when there is not sufficient information about particular securities or institutions to assess those risks. Sensible protections of consumers can not only help to reduce harm to consumers but also avoid uncertainty about underwriting standards and performance of, for example, mortgages included in securitizations, that have shaken the confidence in the securitization process itself.

Given that the Financial Stability Board (FSB) -- an international body comprised of officials from finance ministries, central banks, and financial supervisors -- has proposed more than 60 different reforms to the G-20, my remarks here will be far from comprehensive (see FSB, Bank for International Settlements, April 2009). I will, for example, not touch on important accounting issues. In addition, rather than go into detail on proposals for reducing the procyclical elements of capital regulations, loan loss provisioning, and leverage, I will recommend the recent FSB report on these matters (FSB, Bank for International Settlements, April 2009).

Instead, I will highlight a few key aspects of the current reform discussion related to market and legal infrastructure, “too big” and “too interconnected” to fail, and the procyclicality of some market practices. I emphasize these issues because I believe that they are crucial to begin to address fragilities of the financial system revealed by the events of the last few years.

Much has been written – and will continue to be written – on the causes and origins of the crisis (a selective and very far from comprehensive list would include Adrian and Shin 2009, Brunnermeier 2009, Diamond and Rajan 2009, Friedman 2009, Kroszner 2008a and 2008b, Kroszner and Melick forthcoming, Posner 2009, and Shin 2008 and 2009). Rather than delve deeply into that subject, I begin in the next section with an extremely brief overview of my
perspective on some key vulnerabilities that the current crisis has revealed. The subsequent sections then focus upon five areas of reform that I believe are necessary to improve information and incentives for private market actors and government supervisors in order to make the financial system more robust going forward.

First is the role that credit rating agencies play in the informational infrastructure. I will argue that we should not throw the baby out with the bathwater since ratings in traditional corporate debt area, in contrast to structured/securitized products, have continued to be reasonably reliable proxies for risk. Second, I will discuss reforms of the mortgage securitization market, including the role of consumer protection and information provision, that will be crucial to revive that important source of financing. Third, I will turn to the problems of instability and “funding runs” that arise by not having a robust framework for resolving non-bank financial institutions. Fourth, I will argue that moving over-the-counter derivative contracts to platforms with central counterparty clearing will be crucial to making markets more robust. Reforming the resolution regime and the OTC market will help to make institutions less interconnected and the system less vulnerable to ripples from a failure becoming a tidal wave. I will then end with a brief discussion of provisions in some contracts that might at first appear to protect counterparties but can be destabilizing to the market as a whole.

**Key Vulnerabilities of the Financial System**

Unlike the financial system of the past for which most of the regulatory and supervisory structure had been designed to address, financial intermediation has grown much more complicated and interconnected. Much of the regulatory structure focused on protecting banks
and what had been their primary source of finance, that is, deposits. But banks do not play the
same role they once did and the fragilities are not the same as they were when much of the
structure of oversight was created. Sixty years ago, for example, depository institutions held
roughly 60 percent of the assets in the financial sector but by 2006 that share fell in half to 30
percent (see Kroszner and Melick forthcoming).

Transformations have occurred on both the liability and asset sides of the balance sheets
that have created greater inter-linkages. Deposits have become a less important source of
funding. Banks, as well as other financial institutions, increasingly have come to rely on market-
based sources of short-term funding, such as commercial paper, asset-backed commercial paper,
and the repurchase agreement market. Money Market Mutual Funds, which didn’t exist before
the 1970s but now hold roughly $5 trillion of assets (roughly half the size of bank deposits), have
become key sources of this funding. Instability in money market funds, for example, can have
enormous consequences for the rest of the system. On the asset side, banks and other
intermediaries have come to rely increasingly on the ability to securitize, that is, sell, assets they
generate, that is, loans and mortgages. This “originate to distribute” model of intermediation
thus relies heavily on the operation of the securitization markets, thereby making the
intermediaries more vulnerable to any instabilities that arise in these markets.

With these transformations, banking and intermediation system more generally has come
to be characterized by long chains with many the crucial links in the chain being market-based,
non-bank intermediaries that do not rely on deposits for their funding (see Adrian and Shin 2009
and Kroszner and Melick forthcoming). The many layers of intermediation in the modern
financial system thus create chains of inter-linkages that can make the system more vulnerable to
shocks in any one single market or institution. Mismanagement or misjudgments about risk in particular institutions or markets, rather being self-correcting through the elimination of players who made the mistakes, can cascade through the system and raise questions about the viability of institutions throughout the system. A market-wide break down of confidence can then occur due to the potential inter-linkages but lack of knowledge of the both counterparty exposures and uncertainty about how those exposures may be resolved. Previously deep and liquid markets can suddenly freeze, revealing the high reliance on leverage and, in particular, on short-term of longer-term assets such as mortgages.

The increased reliance on the functioning of markets on both the liability and asset sides of the balance sheet also puts an increasing burden on the resiliency of the infrastructure of those markets, particularly on information and on legal aspects of contract clarity and enforcement. As I describe in the following sections, a number of reforms can help to make these chains of intermediation less vulnerable to any individual weak link in that long and complex chain.

Role of Credit Ratings and Credit Rating Agencies: Don’t throw the baby out with the bathwater

Much of the both public and private supervisory system relies, at least in part, upon assessments made by the large credit ratings agencies, e.g., Moody’s, Standard and Poors, and Fitch, as well as a number of smaller or more specialized organizations. These rating constitute a important part of the informational infrastructure that takes on particular importance in financial systems relying heavily upon when market-based financing rather than traditional deposits. On the public side, capital charges for some classes of securities, derivatives, and loans are adjusted
to take into account the credit rating of a borrower or counterparty. The SEC has long given preferential treatment in terms of lower capital requirements or “haircuts” for highly-rated securities. Bank supervisors around the world have incorporated ratings into their assessments of capital adequacy, and Basel II capital framework gives concrete guidelines on how ratings should affect capital for certain types of assets. Ratings also are used to restrict what may be held in certain portfolios. Rule 2a-7 under the Investment Company Act of 1940, for example, prohibits money market funds from holding short term debt securities that are below certain top ratings categories. (See SEC, Proposed Rule: Definition of Nationally Recognized Statistical Rating Organization, April 19, 2005.)

Private actors also rely on credit ratings in a variety of ways. Many internal risk management systems and investment committee guidelines at institutional investors, for example, rely heavily on ratings to determine portfolio allocation and what can and cannot be held in portfolio. Downgrades, in some cases, can lead to a requirement by a portfolio manager to sell particular securities. As I will discuss more in the final section on potentially destabilizing contracts, a rating downgrade is used in many contracts as a trigger to require restrictions on activities, to post additional capital, or to take other steps to provide added protection for the counterparty.

In principle, credit ratings can be an efficient way to summarize the rich and complex information known about a firm or security and that is why they have become so widely used by supervisors and in private markets. When John Moody first proposed some form of simple ratings scale just prior to WWI, many in the markets ridiculed him for trying to do the impossible. By the 1920s, however, simple rating scales had become commonplace and their
importance was recognized in the Securities and Exchange Commission in the 1930s. The development of ratings scales that allow for easy comparisons of different securities parallels the development of consistent grading systems for grains and other commodities developed on the many commodities and futures exchanges during the 19\textsuperscript{th} and 20\textsuperscript{th} centuries and that allowed those markets to become more liquid (see Kroszner 1999).

Over time, both through SEC rules and private choices, there has been increasing reliance on the ratings issued by the Nationally Recognized Statistical Ratings Organizations (NRSROs, a term coined in 1975), which are regulated by the SEC. Part of this increasing reliance had come from a lengthening track record where, at least in the realm of traditional corporate debt, the ratings were seen to be reasonably reliable proxies of risk. The spectacular failure to provide reliable guidance about the risks in structured financial products, particularly mortgage-backed securities (MBS) and collateralized debt obligations (CDO), in the last few years, however, has led to calls for major reforms (e.g., FSB Report, April 2009). These proposals range from greater transparency in the ratings process to fundamental changes in the business model and even government run ratings organizations.

Let’s make sure, however, that we do not throw out the baby with the bathwater. A major focus of concern has been the potential for conflict of interest when the firms or creators of the securities to be rated are those who pay the rating agencies. It is important to remember that this has been the business model of rating agencies for decades. Although the potential for conflict had long been there, why did the rating agencies not succumb earlier? Why have the credit ratings on traditional corporate debt performed reasonably well through this severe
downturn, in stark contrast to those on structured products, since the same potential conflict “to please the issuer” would exist for both traditional corporate debt and structured products?

I believe that competition, or the lack of it, can explain the difference. With traditional corporate debt, there are many analysts who follow individual companies and provide their own assessments of a firm’s prospects and risks. They are able to do so because a substantial amount of publicly-disclosed data that is readily available so the “information advantage” that a credit rating agency might have compared an industry analyst may not be great. In addition, the models for assessing risks in corporate debt are relatively well established, and long histories of data exist to test and stress models in a variety of economic conditions. Thus, although there are only three large rating agencies, they effectively face significant competition from large number of industry analysts and market participants who, at relatively low cost, can undertake their own due diligence. In other words, “trust but verify” can operate reasonably effectively in these markets.

Contrast this situation with structured credit products, such as tranches of MBS and CDOs (see Kroszner 2008c). First, they are relatively new instruments with relatively short histories, particularly under stress situations. Second, the securities tend to be more complex and difficult to model, requiring much more specialized knowledge than typical corporate debt would. Third, the MBS and CDO securities were not standardized. Provisions from the payment hierarchies in the different “tranches” of the securities (so called “waterfall”) to the leeway servicers of the underlying mortgages had to restructure them varied considerably across different issues. Fourth, there was no standardization of data about the characteristics of the assets going into these securities, once again making it costly for outsiders to undertake their
own assessment of risk. Fifth, most of these securities were relatively small issues so there were higher costs, relatively to the issue size, to determine and assess the unique features of each MBS or CDO issue. (I will analyze problems that these characteristics pose for the revival of securitization in the next section.)

Thus, the ratings agencies effectively faced significantly less competition in their assessment of structured products than in traditional corporate debt. The different behavior of the credit rating agencies in the two realms is illustrated by the following: At the start of 2008, a dozen firms received a triple-A rating but more than 64,000 structure financial products that received the coveted triple-A rating (Blankfein 2009). I believe that competition differences are fundamental to understanding the continued reliability of credit ratings in areas such as corporate debt while simultaneously ratings for structured products have proved to be distressingly unreliable.

Introducing more competition, directly or indirectly, should be the focus of reforms for credit rating agencies. The G-20 and FSF have advocated improved codes of conduct, greater transparency and information disclosure about models and data. These would be very helpful in allowing market participants to “trust but verify,” and some initial steps have been taken. In addition, reducing the explicit reliance in regulatory rules on ratings from officially-sanctioned rating agencies encourage more due diligence and effective competition from other evaluators. Regulators have begun to take steps in this direction.

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1 On a complementary aspect of competition, Benmelech and Dlugosz (2009) provide evidence that tranches of structured products rated by only one of the major agencies have been more likely to be subject to subsequent downgrade than those with multiple raters.
Some have suggested that ending the “issuer pays” model and requiring an “investor pays” would address the problem. Although I think it is important to allow different business models to compete and barriers to entry into the ratings business should be reduced, I think that when there is sufficient competition, ratings produced under the traditional business model can be reliable. Also, there is a potential for conflict of interest on the part of some classes of investors, who might like to achieve higher rates of return but still satisfy regulatory or contractual requirements restricting investments to highly-rated instruments. They might have an incentive for “grade inflation.” (See Calomiris 2009.) Thus, an “investor pays” model will not necessarily produce superior outcomes.

As I will argue in the next section, for the securitization markets to revive, fundamental changes need to take place in market practices that would allow for lower costs for investors to undertake their own due diligence and, thus, effectively increase the competition and scrutiny that rating agencies face in this realm.

**Reviving the Securitization Markets and the Role of Consumer Protection**

In principle, mortgage securitizations make good economic sense: By providing access to the broad capital market, securitization allows loan originators to access a wider source of funding than they can obtain directly. In addition, securitization can limit an originator’s exposure to prepayment risks associated with interest rate movements, to geographic concentrations of loans, and to credit and funding risks associated with holding mortgages all the
way to maturity. Effectively, securitization can significantly lower the cost of extending home
loans, and lower costs can be passed along to homeowners in the form of lower mortgage rates.

The housing government-sponsored enterprises (GSEs – Freddie Mac and Fannie Mae, also called “agencies”) have played an important role in the development of mortgage
securitization in the United States. In large part, the broad appeal of agency MBS can be traced
to the explicit guarantee of the securities by the sponsoring agencies. There also was a
perception fostered by the agencies themselves of implicit government backing. The GSE
guarantees likely implied that the returns to potential investors of undertaking a thorough and
costly credit analysis of underlying mortgages in agency MBS pools were low, so that task was
essentially left to the agencies themselves. The GSEs took on increasing risks without managing
those risks effectively, particularly as their activities and balance sheet expanded rapidly.

Obviously, the result has not been salutary for the GSEs, the mortgage market, or the
taxpayer. Even as agency MBS issuance took off in the 1970s and 1980s, the most basic
infrastructure needed to conduct credit analysis on home mortgage pools--comprehensive loan-
level data that was broadly accessible in a standardized format--went essentially undeveloped.
Private market participants had little incentive to undertake the costly task of building databases
and monitoring the individual loans, given the insurance from the GSEs that was perceived to be
ultimately backed by the US Treasury. The GSEs, of course, did not have an incentive to
provide information to the market since they emphasized the implicit government guarantee.
Providing more data would have helped to foster the development of modeling of mortgages by
potential competitors to the GSEs. Thus, the encouragement of the growth of the MBS market
through the GSE activities, with their implicit government guarantees, came at the price of reduced market monitoring and underdevelopment of the informational infrastructure.

During the early to mid-2000s, potential competitors to the GSEs began to issue “private-label” MBS (that is, not issued by the GSEs) in increasing volume but the data and information infrastructure was lagging behind. The paucity and inaccessibility of data about the underlying home loans was a contributing factor to why private-label MBS was able to expand so rapidly in 2005 through early 2007 despite a deterioration in underwriting standards and prospective credit performance. That is not to say that better data would necessarily have led investors to anticipate the problems in private-label MBS. But I do think it was a significant hindrance that the information needed to infer, in real time, the extent to which subprime and alt-A mortgage underwriting standards were sliding simply did not exist in a form that allowed the widespread scrutiny or objective analyses needed to bring these risks more clearly into focus.

Ironically, the “tranching” or slicing up of the payment streams of the private-label MBS was partially in response to demand for greater protection for purchasers of the private-label MBS due to the lack of GSE guarantees. As with any rapidly developing market, there is a learning process during which it takes time to understand risks and stress-test models. Market participants initially relied heavily upon the credit rating agencies to do analysis and provide the imprimatur of a AAA-rating because the development of the infrastructure for doing private due in this market had been slowed by the role of the GSEs and the perception of government guarantees. The tranches often involved pay-off structures that, although complex, would provide reasonable security based on average historical data on mortgage performance. Without the more comprehensive data on a wider variety of mortgages (both in terms of the terms of the
mortgages and the sector of the market such as subprime), however, the “non-linearities” or “cliff effects” or “tail risks” embedded in tranches were difficult to model and evaluate and the potential to deviate from “average performance” was difficult to know. These structures were very different than those of traditional debt securities that the credit rating agencies had been evaluating for many years. The low-probability “tail risks” thus did not receive sufficient scrutiny in a market where it was particularly difficult to undertake independent due diligence, that is, to trust but verify.

While comprehensive loan-level data for mortgage pools are necessary to rebuild confidence in private-label MBS (and the American Securitization Forum is undertaking such a project\(^2\)), improvements in the contractual structure of private-label MBS are also needed to revive the market and address some of the sources of the failure of the credit rating agencies in this market.

First, in recent years, the complexity of many deals made non-agency MBS difficult to value. For example, looking at private-label MBS deals constructed in the heyday of 2006, some subprime trusts included three separate pools of mortgages--for example, prime-rated jumbo loans, alt-A first liens, and a blend of subprime first and junior liens--with cash flows that were prioritized using complicated payoff rules among more than a dozen different securities. The securitization contract might have dictated that one AAA-rated tranche might have been paid using only cash flows from the prime jumbo loans, while another AAA-rated tranche could have

received no payments at all from that pool. Given that future investors will rely less on the credit rating and will wish to be able to do their own due diligence, simpler structures that are more standardized and easier to evaluate will be necessary to bring down information costs in this market.

Second, fewer and larger tranches in private-label MBS could have a couple of key benefits. For instance, investors might view larger security issues as being more likely to sustain liquid trading conditions, which would allow investors to rebalance their portfolios, as conditions evolve, at reasonably predictable prices and with transaction costs comparable to those of other securities traded in “thick” markets. In addition, as has become evident, tranched securitizations are exposed to tail risks--situations that can be expected to occur only rarely but which convey very negative returns. Numerous thin tranches may be more vulnerable to tail risks, because credit losses in the underlying loan pool may be more likely to wipe out designated cash flows for the entire tranche--so-called nonlinear, or cliff, effects. Thus, future mortgage securitizations that rely on simpler cash flows and larger tranches might reduce some of the exposure to tail risks and enable investors to gain confidence.

Third, non-agency mortgage securitization contracts contained numerous idiosyncratic features that limited the comparability of deals that may have appeared to be similarly structured. Not only might there have been subtle but significant differences in the cash flow obligations to each tranche, but there was also much variation in other important provisions of the so-called “pooling and servicing agreements,” such as duties on servicers of the loans in the pool and the representations and warranties that govern the circumstances under which poorly performing loans can be put back to the originator. Greater clarity and consistency in the obligations of
mortgage servicers in determining when and what types of loan modifications and principal write-downs can occur also would streamline and expedite the workout process, likely reducing foreclosures and reduce uncertainty about the payoffs to investors. Once again, this would help to bring down the costs for market participants to do their own evaluations.

Thus, even if comprehensive data on the loans in the pools had been available, a thorough credit analysis would have required both a detailed reading of the documentation describing a particular deal’s potentially unique structure and a careful analysis of how its cash flow prioritization would affect returns to holders of the particular tranches of securities as laid out in the contract. Although such an analysis is possible, it may be beyond the available resources for many investors. More homogeneous mortgage securitization contracts with fewer and less complex tranches could significantly lower the barriers to entry for credit analysts, effectively providing more competition for the credit rating agencies and promoting greater transparency and perhaps more confidence among investors about the securities’ underlying risk-return attributes.

Even with all of these reforms, however, the mortgage securitization may be slow to recover due to concerns about underwriting standards in an “originate to distribute” model. Many have discussed the potential for loan originators to have a reduced incentive to assess carefully the likelihood of repayment of a mortgage if they less it into a securitization without recourse rather than hold it on their books where they would directly bear the losses (e.g., Bank of England’s Financial Stability Review, 2008). There continues to be a lively debate about how much loan originators may have taken advantage of their information advantage about the quality of a loan to originate and sell “lemons” without those risks being properly disclosed and
priced. The credibility of underwriting standards in an “originate to distribute” model certainly has been called into question and investors will require an increase in that credibility before returning to the market. Improved data, disclosure, and modeling will be crucial, as noted above, but this is where consumer protections such as those embodied in the Home Ownership Equity Protection Act (HOEPA) rules put forward by the Federal Reserve in 2008 also can be helpful in restoring credibility and reviving the market (see Kroszner 2008a).

Mortgage borrowers, their communities, and investors as well as lenders and securitizers that wish to rebuild this market, can directly benefit from sound underwriting standards and protecting borrowers from abusive practices. Practices that have hurt consumers have also undermined the confidence of investors and contributed to a virtual shutdown of the subprime market with consequences for all segments of the mortgage market as well. It is important to have active enforcement to prevent loans that strip borrowers’ equity or involve unsound underwriting standards. Protecting borrowers through enforcement of sound underwriting standards also protects the integrity and proper functioning of the mortgage market by increasing investor confidence. Sensible and effective consumer protection thus is important for revival of these markets since it can reduce uncertainty and revive the flow of credit, thereby relaxing some of the constraints that the financial crisis has had on consumer credit availability.

The HOEPA rules apply to “high cost” loans, that is subprime loans, underwritten by any type of financial institution, including banks, independent mortgage companies, or mortgage brokers. The rules prohibit a lender from granting a mortgage without taking into account the borrower’s ability to repay the loan from income and assets other than the value of the house. Second, the rules require that a lender verify income and/or the value of assets that the lender
uses relies upon to determine the borrower’s repayment ability. Third, lenders must establish an escrow account for the payment of property taxes and homeowner’s insurance for first-lien loans. Such underwriting standards not only help to protect consumers from potentially abusive practices but are sensible ways to provide greater comfort to market participants who may be trying to estimate the risks associated with such lending. Such underwriting standards can help to mitigate the “lemons” problem by reducing uncertainty about “low quality” loans in the market and may thereby and restore credibility that mortgages sold into MBS will adhere to a minimum underwriting standard.

A mortgage securitization and structured finance market build upon significantly more detailed data disclosure, more consistent and less opaque contracts, and improved underwriting standards will help to revive the flow of credit to the mortgage market and make the market more robust to changes in market conditions.

Next I want to turn from some of the specific contract structures and market practices that made the securitization and structured finance market quite fragile, to focus on institutions, particularly those that are large and interconnected through various market contracts.

**Improving Resolution of Financial Institutions**

Trying to define what is a systemically important institution is particularly difficult. The boundary line will change over time as market practices, products, and institutions and their relationships change. Rather than tackle this particularly knotty question directly, I will focus on
some changes that can make the failure of institutions, regardless of their size or complexity, less likely to be systemically important. The failure of any significant player in a particular market, as well as of course significant players in many markets, can have ripple effects. The reforms I focus on here might reduce the frequency with which ripples from a failure can turn into tidal waves that can devastate a wide variety of markets and institutions.

Financial markets and institutions tend to rely quite heavily on well-developed legal and court systems. This is why uncertainties generated by bankruptcy, for example, can have a significantly larger impact on such firms than on non-financial firms. A clear example of this is the pressures that the remaining large independent investment banks were facing in the first half of September 2008. They were finding it increasingly difficult to obtain funding, either through the issuance of short term commercial paper or in the overnight secured lending markets (triple party repo). In addition, customers and counterparties were turning away from them. Given the inefficiencies and uncertainties of how contracts would be treated in bankruptcy, customers of the firms were concerned that insolvency of, for example, their broker could lead to their accounts being frozen, even if temporarily. When there was such high demand for liquidity, even a relatively small probability of not having the ability to trade and having some funds temporarily frozen can even long standing customers to turn elsewhere.

These institutions were facing a form of a run. This was not a run by depositors as had been witnessed in the US in the early 1930s, but by their funders, counterparties, and customers, with each feeding on the other. Given uncertain about how secure “secured” funding was, arising at least in part from bankruptcy/legal uncertainties (particularly in terms of timing of repayment or ability to liquidate the collateral), funders were pulling back. At the same time,
customers fearing the uncertainty how their accounts/activities might be affected by bankruptcy, also pulled back and began switching to competing entities with few such concerns.

In other words, the business model of these institutions was effectively imploding, being driven at least in part by the uncertainties of how contracts would be treated under bankruptcy. As has been argued for many countries around the world, uncertainties about contract enforcement and property rights can reduce the willingness of investors to provide funds (e.g., La Porta, Lopez-de-Silanes, Shleifer and Visny 1998 and de Soto 2000). In some sense, there was a parallel in the extreme circumstances of 2007 to 2009 for the United States: the uncertainties about property rights and contract enforcement in financial markets came to the fore and the consequence was a significant disruption of financial flows and freezing of markets.

An improved resolution regime for large financial institutions could help to reduce the likelihood of a ripple turning into a tidal wave and of the freezing of markets. A key goal would be to reduce uncertainty about the process, timing, and treatment of customers and claimants when an institution is insolvent or close to insolvency and promote expedited resolution to reduce concerns about access to funds and liquidity. One approach would effectively replace the bankruptcy code, much as the FDIC’s authority does now for insured depository institutions, to allow the resolution authority to become a conservator or receiver and merge the institution or transfer it to a “bridge financial company.” An additional complication for non-depository institutions and holding companies is the patchwork of other resolution regimes that may apply to such institutions facing failure, including the Secured Investors Protection Act (SIPA) for brokerages, a wide variety of state laws and state resolution and insurance schemes for insurance companies, foreign statutes for internationally active institutions, and the Federal Deposit
Insurance Act itself for depository institutions within a holding company structure. (See Paul, Weiss, Rifkind, Wharton, and Garrison, April 10, 2009).

Providing as much clarity as possible ex ante about which types of institutions will be covered and how their financial contracts will be treated will be crucial to the success of such a resolution regime in reducing uncertainty and making markets more robust in the face of failing financial institutions. Various forms of “pre-packaged” bankruptcy, “living wills,” and, as described in the next section, clearinghouses that can deal with failures in the derivatives markets, can help to reduce uncertainty and have concerns about bankruptcy become self-fulfilling.

A “living will” could provide a clear roadmap for how funds would flow and various creditors, counterparties, and customers would be dealt with as an institution begins to experience difficulty but prior to bankruptcy. It would provide clear guidance to market participants and supervisors about how a large complex institution might be dismantled and how particular operations that got into trouble would be wound down. To be credible, such a contract would require a significant increase in the transparency of the operation of a financial firm, e.g., less commingling of funds, greater clarity of exposures, etc. One of the challenges is differences in tax regimes across venues that can lead to greater complexity of operations and flows as financial firms try to minimize tax payments (see Tett 2009). In the UK, the Financial Supervisory Authority (FSA) is encouraging financial institutions to provide a detailed description of the wind-down process prior to formal bankruptcy filing but it is unclear whether it is receiving the traction.
In the US, the 2009 Treasury proposal includes a call for a “rapid resolution plan” that would involve a clear articulated strategy that would be approved periodically by the financial institution’s board and by the supervisors on the wind-down of an institution in trouble (see Kashyap 2009). Greater clarity and perhaps even contractual commitment that would be sustained and protected by the courts could make creditors, counterparties, and customers less likely to run on a troubled institution. Similarly, “pre-packaged” bankruptcy that could be swiftly and reliably enforced by the courts would also reduce uncertainty and make it less likely that such runs would occur. Providing greater certainty through clearly articulated contractual provisions that would clearly articulate how various claimants would be treated in a resolution and not only reduce the costs of bankruptcy but also make a destabilizing funding run less likely spark a failure.

Some proposals for a change in the resolution regime, however, may be likely to increase rather than decrease uncertainty. If wide-ranging powers are given to government authorities to intervene and rewrite contracts without clear rules and guidance about how various classes of creditors, counterparties, and customers would be treated, then the goals of providing clarity and reducing the likelihood of destabilizing pull-backs would not be achieved.

A closely-related but distinct issue is the role of government assistance or support for institutions covered by this regime. Certainly the potential for moral hazard problems may be huge if there is possibility of large amounts of taxpayer assistance with little ex ante reigning in of risks that these institutions may undertake. The ability for the resolution authority to provide assistance and the source of funding for such assistance are crucial questions. Regularizing and systematizing any such interventions once again could help to reduce uncertainty, but would
have to come with safeguards to protect the taxpayer from excess exposure to private sector risk taking. The Treasury Department has put forward a proposal for providing the FDIC powers to act as conservator or receiver for non-bank institutions but specifics of how to deal with the potential moral hazard problems remain unclear.

An additional issue is the ability of the central bank to provide secured financing to non-bank firms experiencing stress. Prior to the creation of the Primary Dealer Credit Facility (PDCF) in March 2008, the Federal Reserve did not have the ability to provide secured financing to non-bank financial institutions (see Kroszner and Melick forthcoming). Most other central banks around the world do not face such a restriction, which is a consequence of the Glass-Steagall Act’s separation of commercial and investment banking. This Facility was created using the emerging powers granted to the Board to be exercised only during “unusual and exigent” circumstances, so the Facility is only a temporary one. It would make sense to regularize such a facility to be able to provide liquidity to major financial institutions, much as most foreign central banks can, even though most of the major independent investment banks have become or merged into bank holding companies. 3

Central-clearing Counterparties and Clearinghouses versus Over-the-Counter Derivative Markets

A goal that is complementary to improving resolution regime for large non-bank financial institutions is to reduce the need for and scope of such a regime, that is, to adopt policies that reduce the likelihood of being faced with the prospects of a ripple turning into a tidal wave. One

3 It is interesting to note that the ability to gather insured deposits was seen as an valuable source of funding to stabilize the independent investment banks facing pressure in September 2008.
potentially effective way to deal with this is by bringing derivative contracts onto platforms with centrally clearing counterparties, such as clearinghouses, to mitigate the risk that derivative markets that can create a “too interconnected to fail” problem. An additional approach, as will be discussed in the next section, is by discouraging contracts that have the potential to destabilize markets: for example, when the safeguards that market participants employ for their individual positions can have the unintended effect of actually exacerbating market-wide distress and amplifying losses among multiple market participants during times of market turbulence.

Clearinghouses as central counterparties can be an effective way to mitigate the potential problem of “too interconnected to fail” (see Kroszner 1999). In the 19th and early 20th centuries, futures exchanges struggled with the challenges of trying to make contracts more readily tradable on the exchanges. As noted above, homogeneity of contract provisions and enforcement of a consistent commodity grading regime (e.g., winter wheat #2 instead of Farmer Jones’ wheat and Farmer Smith’s wheat) were crucial to enhancing the liquidity futures markets on the exchanges. The last major step toward full fungibility of the contracts, however, was reducing and homogenizing counterparty risk. Even if all of the other features of the contract were identical, the potential for non-performance would vary with the identity of the stability of the entity on the other side of the transaction -- so called “name” risk – since the contracts were bi-lateral obligations between the buyer and settler.

To limit and homogenize counterparty risk, the clearinghouse came to act as a central counterparty for all of the transactions on the exchange. The clearinghouse as central counterparty generally runs a balanced book to try to avoid direct market exposure. The clearinghouse requires margin to be posted by the members and cumulates a fraction of its
clearing fees in a reserve fund. In the case of a member's default, the central counterparty can
draw upon the proprietary margin of the defaulting member, its own reserve fund, pre-
established lines of credit, and the assessment of members for share purchase. The exchange
and clearinghouse set a number of criteria for capital, liquidity, exposure limits, etc. of their
members and police whether their members are in good standing. Central counterparty clearing
has been quite robust to stressful market conditions, allowing them to operate successfully
through the Great Depression, World War II, and the failures of major market participants.

The central counterparty structure attempts to address the problem of system-wide risk in
these markets, that is, of a failure of one institution causing problems throughout the system due
to cascading failures on derivatives contracts. If the central counterparty is credible in terms of
the resources at its disposal to deal with failures and make good on the existing contracts, then
transactors will then be limited in their exposure to the failure. Thus, institutions become less
“interconnected” in the centrally-cleared derivatives contract market than in an OTC market
because the central counterparty guarantees the performance on the contract. A credible central
counterparty then acts as a barrier that helps to prevent the ripples of a failure of a market
participant turning into a tidal wave that can undermine other institutions.

In addition, with central clearing, there is much better information about exposures and
concentration of risks. The central counterparty would quickly become aware of rapid changes
in exposures of market participants and undertake actions to try to limit them. Supervisors then
could much more easily monitor risk concentrations, unlike in OTC markets, and become aware
of risk exposures at institutions that the supervisor may not directly regulate but that could have
system-wide consequences. Central clearing thus makes it more likely the excessive
concentrations of risk can be detected and defused earlier, and thereby contribute to stability by improving the informational infrastructure of the marketplace.

Markets with a credible central counterparty also are less likely to freeze up. In March and September 2008, for example, there was concern that the failure of a major player in the CDS market could undermine confidence in all of the counterparties because the market might simply break down. Hedges “broken” when a counterparty failed then could not be replaced. In this circumstance, positions that initially appeared well-hedged could have become “naked” risk exposures – in other words, “net” positions may have become “gross” positions and institutions would not have had sufficient capital to cushion against those exposures. This uncertainty about counterparties’ counterparties’, led confidence to evaporate and “runs” by funders, counterparties, and customers on institutions perceived as vulnerable. A credible central counterparty thus can help to avoid such a situation because the central counterparty would make good on performance of the contracts and there would be less concern that the market would break down and that “broken” hedges could be replaced.

If central counterparty clearing has such benefits, then why has it not been adopted in all derivative markets, such as credit default swaps (CDS)? One reason is that the gain in safety may come at the expense of flexibility. A central counterparty imposes a degree of standardization upon contracts in order to make the central-clearing feasible. Similarly, it may be easier to experiment and innovate OTC. Part of the reason for the rapid growth of OTC derivative markets is due to the demand for variety and customization of contracts. That said, many OTC contracts are already eligible for clearing through a central counterparty. For example, SwapClear, a central counterparty for interest rate swaps, clears about half of global
single-currency swaps between dealers. The CDS that are created as indexes of individual name CDS contracts, e.g., an index of similarly rated or otherwise similarly situated firms, tend to be reasonably standardized in their structure.

A second reason may be volume and liquidity. Undertaking the costs of central clearing by market participants and managing risks for central counterparty are most feasible when there is a relatively deep and active market in the contract. For CDS, for example, the index CDS as well as individual name CDS on the largest firms account for the vast majority of trading in CDS and would be likely to have the depth to make central clearing feasible.

A third reason may be that some players in an OTC market might prefer the opacity of an OTC market compared with greater information that becomes public in an centrally-cleared market about pricing, trading, etc. There were extensive discussions and debates for many years, for example, among Chicago Board of Trade members with somewhat differing interests before the Board adopted full central counterparty clearing in 1925 (see Pirrong 1997).

Strong incentives through differential capital charges for centrally-cleared vs OTC derivatives could be given to the major players in derivatives markets to migrate existing contracts, to the extent possible, onto such platforms and to develop contracts with sufficient standardization that they can be centrally cleared. This would reduce the likelihood of institutions threatening to become “too interconnected to fail” as the supervisors and exchanges can more readily monitor the buildup of exposures and as the consequences of the failure of an institution is mitigated by the ability of the central counterparty to reduce disruption of the markets. Naturally, the extent to which the central counterparty will be successful will depend
on its perceived ability to withstand the failure of key players in the market so the strength and credibility of central counterparties to manage risk in new areas such as CDS will be crucial.⁴

**Potentially Destabilizing Contracts**

The financial system also can be made more robust by providing improved incentives for counterparty credit risk management that operate successfully in normal times and in periods of market-wide stress. A broad class of market practices exist, for example, that can provide useful protections when an individual firm experiences trouble but these practices may not provide useful protections--and could be potentially harmful--when the trouble is marketwide. In other words, such provisions can exacerbate so-called tail risk and destabilize institutions and markets (see Kroszner 2008b).

A representative example is the use of rating triggers in counterparty credit risk management. Some debt contracts and OTC derivative contracts link collateral requirements to a counterparty’s credit rating. If a counterparty is downgraded past some threshold, it may become subject to an immediate margin call. Counterparty credit risk appears to remain contained so long as the rating trigger is breached long before the counterparty could reach insolvency--that is, the trigger is set at a relatively high rating. In such cases, this type of clause can be quite valuable in mitigating counterparty credit risk and in giving the counterparty strong incentives to try to maintain its financial health and, hence, its rating.

⁴ Pirrong (2008/2009) raises questions about whether the resources and risk management of central counterparties, which have proved so resilient for so many exchange-traded derivatives, will be able to handle new OTC contracts such as CDS.
This type of protection against counterparty risk is most effective when changes in risk are specific to the counterparty and not correlated with increases in risks to other counterparties and in other markets. In this case, the posting of additional collateral long before a firm reaches insolvency can provide valuable protection. Such a provision may not provide protection, however, if the rating change comes too late, the firm is on the brink of insolvency, and the requirement to post the margin can push it into insolvency.

More importantly, such a provision may also fail to provide protection if the trouble at the counterparty is correlated with trouble at other institutions and in other markets, that is, due to marketwide distress. In times of widespread distress, many counterparties may have to sell assets simultaneously to post margin. This occurrence can potentially lead to a situation in the market in which assets are sold quickly and, in illiquid market circumstance, below their fundamental values. When many counterparties are forced to liquidate similar assets, prices for those assets are pushed down. If these assets are used as collateral on other positions, then the decline in value leads to additional margin calls. This set of circumstances, in turn, forces further liquidation and price declines. A widespread use of rating triggers can accelerate this downward slide, with further losses in asset values triggering additional downgrades and requirements to post collateral and liquidate positions. Recent events have demonstrated this potentially destabilizing dynamic at work.

Rating triggers are certainly only one example of market practices that can exacerbate the impact of a systemic event and make financial markets less stable. Credit enhancements and guarantees can also create fragility while seeming to offer protection. A highly-rated guarantor, for example, could offer effective protection against the default of a small number of
instruments. In the event of a market-wide increase in credit risk, however, there is an increased probability that the guarantor would be required to pay out on many positions simultaneously. As the market comes to realize that the credit enhancement may not be effective, further pressure may come upon the institutions that would be left exposed. Thus, widespread reliance on credit enhancements could induce a form of “wrong way risk” in which the seller of protection becomes most likely to default in precisely the circumstances where protection is most valued.

What might seem like a “herd” behavior in some markets may be at least in part a response to the fragile interconnections affecting the stability of those markets. Such apparent herding behavior, reflecting a collective loss of confidence, may be generated by a market infrastructure that induces co-movements across markets and institutions during times of stress. In these circumstances, contractual provisions that might seem on the surface to be prudent counterparty risk management could increase financial market stress.

One way to discourage such contracts would be for careful supervision for the inadequacy of such contracts to deal with – and potentially to exacerbate -- tail risks. Supervisors have typically focused more on protections that covenants afford an individual firm in stressed circumstances without focusing as much on the market-wide consequences of the contracts or their lack of protection against tail events. Capital charges could be imposed to discourage such contracts. In some cases, credit enhancements can reduce capital charges but contracts that do not protect against the type of tail risk described here should not receive preferred treatment. Codes of best practices also could be encouraged by various trade organizations to reduce reliance on or eliminate the use of contracts that have these potentially destabilizing features.
Conclusions

As noted in the introduction, I have not attempted to cover all areas of law, regulation, supervision, and market practice that could be reformed to address problems that the recent crisis has brought to prominence. Rather, I have tried to highlight a number of areas that make markets more fragile and reforms that could help to mitigate too big and too interconnected to fail problems as well as some procyclicality problems. Much of my focus has been on the institutional and legal infrastructure of the financial markets – credit rating agencies, securitization structures, bankruptcy resolution, central-clearing of derivatives, and potentially destabilizing contractual structures – because they play a fundamental but often overlooked or underappreciated roles in generating the confidence and stability that a financial intermediation system that relies on long chains of market-based finance needs to work most effectively. Improving the resolution regime for large financial institutions and bringing over-the-country derivative contracts onto platforms with central counterparties are among the highest priority reforms with the greatest scope for reducing “tail risk” and enhancing stability. Addressing infrastructure issues may be one of the most effective means of making markets more robust going forward.
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