

## Randall S Kroszner: Assessing the potential for instability in financial markets

Speech by Mr Randall S Kroszner, Member of the Board of Governors of the US Federal Reserve System, at the Risk Minds Conference, International Center for Business Information, Geneva, 8 December 2008.

*The original speech, which contains a link to the documents mentioned, can be found on the US Federal Reserve System's website.*

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Good morning. I am honored to give the opening remarks at this impressive conference. Today, I would like to offer some thoughts about risks in financial markets and the manner in which banking organizations need to assess those risks.<sup>1</sup> In particular, I will note the problems that can arise 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. But before offering recommendations that might serve to address these problems for banking institutions, I believe it is worthwhile to take a step back and explore some conceptual issues about the organization of markets.

### A conceptual framework for the organization of markets

In the simplified world of an introductory economics class, a market brings together the potential buyers and sellers of a product to negotiate prices and quantities. In this paradigm, the invisible hand of the market matches all willing buyers and sellers at a single, market-clearing price. Transactions occur instantaneously and costlessly.

While this stripped-down story is remarkably powerful in its essential predictions about the behavior of markets and economic agents, it leaves the operation of the market itself as a mystery. Any real-world market must deal with at least two fundamental questions: first, how do the buyers and sellers find one another? And second, how can buyers be assured that sellers will deliver as promised, and that the goods will be of the quality and value that the buyer expects? To understand how markets deal with the fundamental issues of transaction costs and information costs is an important and enduring challenge for economists.

Market institutions arise to overcome these barriers to trade, but do not arise wholly-formed and perfect. Market institutions evolve. Buyers and sellers gravitate towards markets that prove most effective in fostering transactions, and this rewards successful innovation and refinement in the institutional forms of markets. As market institutions adapt to serve the particular needs of their participants, they grow more varied and specialized. The imperfections and ongoing evolution of market institutions have inspired a rich and insightful literature within economics.

Returning to the first question, how do buyers and sellers find one another in the real world? Each side might be aware that potential counterparties *exist*, but not where and when to find them. Information problems of this sort, often termed *search costs*, have since ancient times been overcome by designating a market by location, time and product. The Pushkar camel fair, which draws 50,000 camels for trade to a small desert town in western India at the full moon in November, is a colorful but not atypical example. In the financial world, a corresponding institution is the exchange. Many exchanges have their historical roots as

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<sup>1</sup> In my remarks, I will use the terms "banks," "banking institutions," and "banking organizations" interchangeably.

gatherings of speculators at a coffee house or other designated public place for a daily or weekly session to buy and sell securities.<sup>2</sup>

The introduction of new technology can change the institutional structure of markets. Improved telecommunications has made it possible to relax coordination on the physical location of markets. Once a building, the exchange is now a network of screens. Furthermore, by dramatically reducing the cost of locating counterparties and comparing prices, technology has increased the scope for decentralized markets such as OTC derivative markets. Decentralized markets excel at providing variety and thus at accommodating the idiosyncratic needs of investors and consumers.

Returning to our second question, then, how can buyers be assured of quality goods in a real-world marketplace? Whenever quality and value are costly to verify, how can buyers be assured that the seller will not deliver subpar goods? Market institutions have arisen to address these concerns. A seller might invest in bolstering its reputation for delivering quality goods or offer a warranty. Standardized grading is a convention that facilitates the unambiguous specification of quality in a contract. An important milestone in the development of commodity markets was the promulgation in 1856 by the Chicago Board of Trade of standardized grades of wheat.<sup>3</sup> This allowed buyers and sellers of wheat to trade in standardized "warehouse receipts," rather than specific lots, with inexpensive quality verification by third-party policy and certification. The idea of standardized grading and third-party assessment was introduced to credit markets by rating agencies in the early 20th century. Of course, as recent events have made clear, the qualitative and multi-faceted nature of credit risk limits the extent to which investors can or should rely on ratings as the sole measure of quality.

A more subtle form of the quality assurance problem arises when a transaction results in future contingent obligations by the counterparties. Future obligations are common in financial markets, where the risk of nonperformance is known as counterparty credit risk. In a credit default swap, for example, each side is seeking to alter credit exposure to the reference entity. The resulting contingent credit exposure to the *counterparty* is entirely incidental to the reason for the transaction, yet may be a first-order determinant of future performance.

Financial markets have developed mechanisms that are specific to the control of counterparty risk. The simplest of these is the posting of collateral against counterparty exposures. Ensuring the efficacy of collateral is challenging even under ordinary circumstances, and may leave counterparties especially vulnerable to large sudden changes in market prices, also called gap risk.

A more sophisticated convention for mitigating counterparty credit risk is a central counterparty or a clearinghouse. In markets with a clearinghouse, all trades are intermediated through a central counterparty. This arrangement can and, in practice, does vastly reduce counterparty risk. The central counterparty runs a balanced book, so generally has no direct market exposure. 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, and the assessment of members for share purchase. As you know, plans are currently being developed to establish one or more central counterparties in the credit derivatives market.

So why do we not find a central counterparty in every financial market? A key reason is that the gain in safety may come at the expense of flexibility. Like an exchange, a central

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<sup>2</sup> The early antecedents to the New York Stock Exchange and other fascinating stories of market formation are elegantly and insightfully recounted in John McMillan, "Reinventing the Bazaar," W.W. Norton & Co, 2002.

<sup>3</sup> See section 1 in Randall S. Kroszner, "Can the Financial Markets Privately Regulate Risk?", *Journal of Money, Credit, and Banking* 31(3), August 1999.

counterparty imposes a degree of standardization upon contracts. As noted earlier, OTC derivative markets have grown so rapidly in large part 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.

### **Assessing recent financial market performance**

Now that I have laid out a conceptual framework about markets and how participants ensure the quality of transactions, I would like briefly to apply that conceptual framework to the events of the past 18 months. Financial crisis can serve as a powerful stimulant to the evolution of market mechanisms, and I expect that the aftermath of the present turmoil will see both innovation and incremental refinement to quality assurance in credit markets and in counterparty credit risk management. I would like to highlight two themes that I believe will influence this process.

First, for quality assurance to be effective, some of the products traded in financial markets have to become simpler and more transparent. Product complexity and a lack of transparency are at the root of many of the problems that have emerged, especially in the markets for securitizations and structured credit products. I elaborated on these themes in remarks I made at a Federal Reserve conference last week on the future of the mortgage market.<sup>4</sup> There I argued that a recovery in the market for mortgage-backed securities (MBSs) will require greater transparency and less complexity, and importantly, comprehensive and standardized loan-level data that will allow more independent credit analysis. For example, the structures of cash flows from mortgage payments in the pool to the various tranches of MBSs should be much less complex than some of those created in recent years, and securitization contracts will need to be made more homogeneous so as to allow greater comparability of risk profiles across deals and perhaps promote more robust liquidity.

I believe that a new infrastructure for MBSs built upon these foundations might be reasonably expected to lower the costs of information production and processing in the marketplace. The reduction of these costs will facilitate broader independent credit analyses, greater due diligence by potential purchasers, and, hence, greater ability to provide a double check on credit rating agencies' evaluation of the riskiness of the securities. In other words, market participants would be more likely to acquire the expertise to evaluate securities issues that were more homogeneous and less complex.

A second key factor for effective quality assurance relates to the institutional and contractual framework for ensuring future performance on financial transactions, namely counterparty credit risk management. Counterparty credit risk management should be focused on its effectiveness in different market situations and its implications for financial stability. There is a broad class of market practices 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.

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

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<sup>4</sup> Randall S. Kroszner, 2008, "[Improving the Infrastructure for Non-Agency Mortgage-Backed Securities](#)", speech delivered at the Federal Reserve System Conference on Housing and Mortgage Markets, Washington, DC, December 4.

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.

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 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.

### **Improving banks' risk management for participation in financial markets**

Marketwide credit events and stresses, and how market infrastructure could exacerbate them, did not receive sufficient attention in risk management efforts in the period leading up to the current turmoil. For example, risk managers did not fully contemplate the possibility that many participants would need to unwind their positions at the same time, that such actions might present substantial losses for several key counterparties, and that collateral posted as protection for positions would fall in value at the same time. There was not sufficient understanding of the correlation between declines in collateral value and the likelihood that collateral would need to be called upon. Similar issues arose with third-party guarantees and with hedging strategies that had less effectiveness than anticipated. Even when risk managers had some understanding of these issues, each individually likely faced difficulty in demanding more collateral or guarantees during good times because no risk manager wanted to be the first.

A key factor for assuring market quality, as I noted above, is assessing the behavior of counterparties in stressful times. Not only do banks need to assess counterparty creditworthiness and behavior on an individual basis, they also need to assess counterparties on a collective basis. They need to understand how their own actions to protect positions can put pressure on key counterparties, especially when other market participants are likely to be taking similar action to protect themselves. So beyond ensuring that their own individual positions are sound and well protected, banks need to assess whether there is a systematic component to a market that could adversely affect multiple counterparties at the same time, and thereby affect their own risk exposures. As we have seen, a counterparty does not need to be technically insolvent for it to be shunned by other market participants. The anticipation of downgrades, triggers, and so forth could very quickly cause a firm to lose funding and fail.

In short, banks and regulators need to understand the type of market conditions that will exist when there is likely to be reliance on collateral, guarantees, or other contract clauses. It is then important to assess the likelihood that the bank's safeguarding actions could worsen market conditions and actually increase its losses. Might the bank only realize collateral at substantially reduced prices? Would multiple counterparties suffer distress at the same time? Would guarantors perform in times of distress? In other words, would the collateral, guarantee, insurance, hedge, and so forth work in precisely the time the institution would need it most, that is, during a market stress event? These are important questions that regulators and supervisors are asking in the Basel Committee and in the Financial Stability Forum, and I represent the Federal Reserve System on both of these bodies.

Naturally, these types of questions underscore the importance of stress testing and scenario analysis that focus on market-wide events. Such stress tests would include the potential for key counterparties to fail or suffer difficulty at the same time, for market liquidity to erode and remain low for some time, and for market participants to view the bank itself as an impaired counterparty. And these stress tests, when properly designed, can provide information that typical statistical models may leave out or have trouble capturing, such as abnormally large jumps or market moves, evaporation of liquidity, prolonged periods of market distress, or structural changes in markets. Stress tests are most useful when they aim to include potential secondary or "knock-on" effects, which are also often difficult to model with standard techniques. In these ways, stress tests can serve as a complementary tool to other risk measures.

Even if the *ex ante* estimate of the probability of joint distress among counterparties appears small, it is still useful to know the severity of such an outcome, since it may clearly reveal an unacceptable loss. Importantly, banks should also conduct stress tests across several markets, since some counterparties are key players across many financial markets and their inability to repay could cascade across those markets.

Of course, based on their consideration of the factors noted above and the results of their stress tests, banks may reassess their participation in certain markets and exercise greater caution to account for potential "tail" risks and better protect themselves in times of market-wide stress. One of the first things they may do is increase their internal assessments of capital needs for these activities, given the added risks that stress tests reveal. They may wish to restructure contracts or alter terms. Institutions also might ask for higher initial margin, given that subsequent calls may not provide as much risk mitigation during distress. They may wish to ask for more collateral, or ensure that the collateral is less linked to the counterparty's condition or broader market distress. Or they might look for other ways to enhance their assessment of counterparties, and, perhaps more importantly, the potential for counterparties to encounter difficulties during marketwide stresses. Additionally, they may wish to conduct more of their trading and hedging on more organized exchanges or with clearinghouses, to benefit from the safeguards I noted earlier in my remarks.

Some banks, acting on a collective basis, may decide to take action to improve the quality assurance performance of markets during future times of stress. Trade associations in the banking industry may consider additional safeguards to reduce the impact of systematic risks among counterparties; for example, banks may collectively act to remove uncertainty associated with back-office inefficiencies and related risks in the credit default swaps market. Another example, as I noted in remarks last week, is an attempt to enhance mortgage markets so that there is greater standardization of data and simpler, more homogeneous provisions in the securitizations, and less reliance on third-party monitoring.<sup>5</sup>

As a more general step, banks should hold higher liquidity and capital buffers, since the enhancements I just noted are still no guarantee against future market distress that could cause correlated and cascading losses among market participants. Finally, banks need to exercise strong discipline so that when good times return, they do not forget the current market difficulties and return to more profligate ways. Indeed, now is the time for banks to establish good risk management policies addressing the issues I have just discussed, so that strong risk discipline is codified.

### **Concluding thoughts**

Of course, it is not just the banking industry, but also those of us in the public sector who have some key lessons to learn. Banks and supervisors alike need to undertake additional work to facilitate the building of robust methods of quality assurance in the financial markets that will help to restore and maintain confidence. Ensuring that banks exercise good risk management, of course, is an important job for bank supervisors, which includes overseeing their ability to properly capture the risks in the markets in which they operate, as well as their ability to conduct appropriate stress testing to explore potential consequences of different types of market distress. Doing so requires that supervisors themselves develop a strong understanding of the value, limits, and potential harms associated with banks' attempts to protect their exposures.

At the Federal Reserve, we have already begun to enhance our supervisory work in this area and are communicating expectations to banks. At the international level, we are working with our colleagues in other countries and within international bodies, such as the Basel Committee on Banking Supervision – which is meeting later this week – and the Financial Stability Forum, to investigate whether other practices could be adopted around the world to mitigate the challenges I have outlined above. This work will be a major focus during the next few months and over the course of 2009.

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<sup>5</sup> Randall S. Kroszner, 2008, "Improving the Infrastructure for Non-Agency Mortgage-Backed Securities," speech delivered at the Federal Reserve System Conference on Housing and Mortgage Markets, Washington, D.C., December 4.