

A CRISIS



of Confidence

. . . and a Lot More

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THE current crisis is the worst to hit mature financial markets in decades, and it is not yet over. In the run-up to the crisis, low nominal interest rates, ample liquidity, low financial market volatility, and a general feeling of complacency had encouraged many types of investors to take on more risk. The lengthy period of benign financial market conditions was expected to continue, global growth had been robust, and the previous excesses of the dot-com bubble seemed in the distant past. In short, many believed in a new paradigm for financial markets. Hence, investment in riskier assets and strategies became the norm, often with little understanding of the underlying risks and insufficient capital to support them.

Despite repeated warnings from the official sector that financial stability could be compromised by the intense “search for yield,” private sector incentives continued to encourage further risk taking. By the spring of 2007, even top managers in some of the largest financial institutions began to express public concern, particularly about structured credit securities backed by subprime mortgages and the leniency of the loan covenants and conditions backing leveraged buyout activity. But, given still-low interest rates and ample liquidity, demand for structured credit products carrying the AAA rating and earning higher-than-normal yields continued unimpeded until mid-2007 (see Chart 1). Supervisors had insufficient information and clout to halt the proliferation of overpriced securities. Thus, competitive pressures to issue and sell these types of products were so intense that—as Charles Prince, Chairman and Chief Executive Officer of Citigroup,

told a reporter in early July that year—top management felt that “as long as the music is playing, you’ve got to get up and dance.”

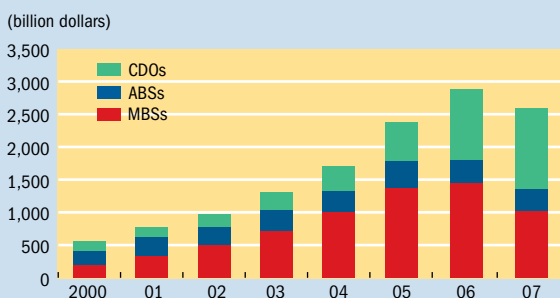
As in many previous credit crises, it was the loosening of credit standards during the lending frenzy that caused the initial set of losses. Although the event was triggered by rising U.S. mortgage loan delinquencies—particularly in the subprime market—the knock-on effects have been particularly severe. The opacity and complexity of the burgeoning array of structured credit products hid the location, size, and leverage of the positions held—sometimes even from the financial institutions themselves. The broadening effects of the crisis have also surprised and unnerved many investors. Solving the problems will not be easy because the incentives that underpinned the crisis are deeply ingrained in private sector behavior and, in some cases, are even encour-

Better incentives for all market players hold the key to greater financial stability

Chart 1

Gaining popularity

Issuance of European and U.S. structured credits has soared.



Sources: *Inside MBS & ABS*; JPMorgan Chase & Co.; and European Securitization Forum.
Note: CDOs = collateralized debt obligations; ABSs = asset-backed securities, including auto, credit card, etc., and excluding MBSs; and MBSs = mortgage-backed securities, excluding U.S. agency MBSs.

aged by regulation. But the problems deserve serious attention because the effects of the crisis are set to reach a broad swathe of average citizens in many countries.

A tale of unraveling

How did the crisis become so severe? This is the first time the market for complex structured credit products has been tested in a downturn. The demand for high-yielding AAA-rated securities drove issuers of structured credit products to reach for lower- and lower-quality underlying loans to meet the demand for their products—slicing and dicing the incoming cash flows into multiple “tranches,” allowing some of the slices to be paid first to investors and thereby justifying a AAA rating (see box). These highly rated, higher-yielding securities were easily marketed to many insurance companies, pension funds, and other smaller banks scattered across the globe. For other investors, such as hedge funds and those willing to take more risk, the lower-rated parts of these structured securities also seemed to have attractive yields.

In the stable financial environment with an abundance of liquidity, investors did not feel compelled to pay much attention to the risks involved in the complex structured products they had purchased, assuming instead they could return or sell the products to others if needed. They trusted rating agencies to evaluate the risks appropriately. In retrospect, too much weight was given to the assigned ratings and too little to either the product documentation or independent investigation of the underlying instruments.

These complex products suffered from both a degradation of the underlying collateral—mostly subprime mortgages originated late in the upswing—and insufficient understanding of how the structures would work during an economic

downturn or when “teaser rates” that had originally applied to the loans expired. The correlations across the loans or other types of securities were insufficiently stress-tested for a credit cycle downturn, when correlations normally rise, or for a national decline in U.S. house prices. Moreover, although credit rating agencies attempted to prominently emphasize that they rated only the risk of actual default (that is, the credit risk), these products also contained liquidity and market risks—risks that investors frequently neglected to consider. Liquidity risk is the risk that the holder may not be able to sell an instrument quickly at the current price, and market risk is the risk that other market conditions, like the path of interest rates more generally, will affect the value of the security.

Although investors may not have fully understood the extent of the risks they assumed—for which they are responsible—the incentive structure of credit rating agencies also played a role in the proliferation of structured credit products. The structurers would request a rating for the various tranches of risk within a structure. If the sizes or characteristics of the various tranches looked as if they were inadequate to achieve the ratings needed to satisfy perceived demand for the tranches, rating agencies would suggest structural alterations (for example, more overcollateralization) to achieve them. This back-and-forth between the structurers, who paid for the ratings, and the rating agencies, who supplied them, at the very least appeared to have undermined the independence of the ratings process.

Liquidity dries up

The more serious stresses arose when it was discovered that the funding methods banks used to hold these illiquid, hard-

What is structured finance?

Structured finance normally entails aggregating multiple underlying risks (such as market and credit risks) by pooling instruments subject to those risks (for example, bonds, loans, or mortgage-backed securities) and then dividing the resulting cash flows into “tranches,” or slices, paid to different holders. Payouts from the pool are paid to the holders of these tranches in a specific order, starting with the “senior” tranches (least risky) and working down through various levels to the “equity” tranche (most risky) (see chart).

If some of the expected cash flows into the pool are not forthcoming (for instance, because some loans default), then, after a cash flow buffer is depleted, the equity tranche holders are the first to absorb payment shortfalls. If payments in the pool are reduced further, the next set of tranche holders (the “mezzanine” tranche) does not receive full payment.

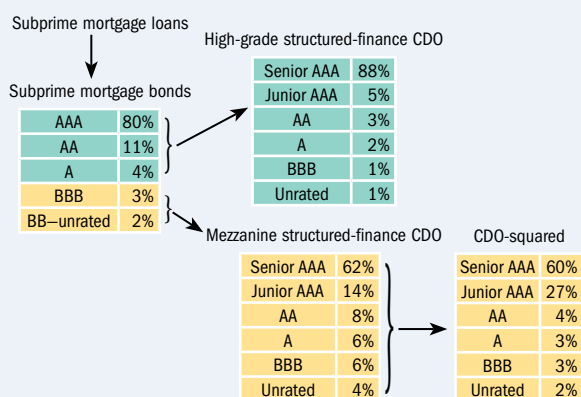
Typically, the super senior tranches and the senior tranches at the top of the capital structure are constructed so that they qualify for AAA credit ratings, meaning there should be a very low probability of their not receiving promised payments.

Until July 2007, when the financial crisis hit, the growth in structured credit finance products had been exponential. For example, issuance of selected structured credit products in the

United States and Europe grew from \$500 billion in 2000 to \$2.6 trillion in 2007.

Highly complex

Structured credit products are thinly sliced and diced.



Source: IMF staff estimates.

Notes: CDO = collateralized debt obligation. Percentages represent share of bond in the rated tranche.

to-value structured credit products were flawed. Many of these products were being held in off-balance-sheet entities of major banks—typically structured investment vehicles (SIVs) and conduits—to take advantage of lower capital charges there, allowing more leverage to be taken elsewhere on the banks’ balance sheet. These conduits were funded with shorter-term asset-backed commercial paper (ABCP), whereas SIVs’ liabilities comprised about one-third ABCP and two-thirds longer-term funding. The problem was mostly one of opacity—the exact holdings of these entities were not transparent to the ABCP investors; nor was the funding strategy generally known—either to the investing public or to some bank supervisors.

When confidence deteriorated, many holders of ABCP that was backed by illiquid structured credit products cashed out of their holdings, shortened the maturity they were willing to accept, or demanded higher yields, especially if they suspected the credit products held were exposed to subprime mortgages. Many of the SIVs and conduits had contingent credit lines with their parent bank in case ABCP purchasers decided not to roll over their paper. The drying up of the ABCP market in August 2007 led to widespread illiquidity in the interbank market, when some of these contingent credit lines were drawn on, or when banks brought the SIV or conduit assets onto their balance sheets to avoid a risk to their reputation with investors. As banks became unsure of their own liquidity needs, they hoarded liquidity, further exacerbating interbank market illiquidity.

Initially, central banks provided emergency liquidity to the financial system, but the need for liquidity has become chronic, requiring central banks to devise new ways of supplying it. The major central banks have typically altered their operations—some to a larger extent than others—to accommodate the ongoing liquidity squeeze. In some cases, central banks have had to accept new types of, and sometimes lower-quality, collateral to keep the interbank market functioning.

Despite central bank liquidity support and, in some cases, lower policy interest rates, the crisis has deepened and broadened. Losses at major financial institutions now include not

only those associated with U.S. subprime mortgages (on both the loans and their associated structured products) but also losses on leveraged loans and *their* associated structured products, other types of U.S. mortgages, commercial real estate, and corporate loans, as a past lack of credit discipline becomes apparent as economic conditions deteriorate. The IMF estimates that, all told, for all types of financial institutions both in the United States and abroad, U.S.-related losses could be some \$945 billion (IMF, 2008). While such

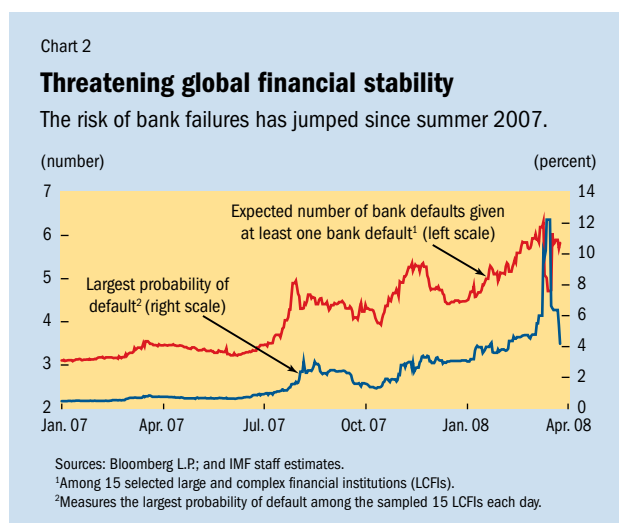
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estimates are inherently subject to error—because of inaccurate information about exposures and the use of market prices that may have overshot the value of securities based on fundamentals and cash flows—they suggest there are still further losses to be disclosed.

Counterparty confidence has thus been compromised, and financial institutions with weakened balance sheets that need to raise more capital and ensure their funding are finding it more expensive to do so. The costs of both equity capital and bond funding have risen. This can be seen by examining the market’s assessment of insolvency risk. Measured by credit default swap spreads, such risks for major banks are now two-and-a-half times higher, on average, than they were at the beginning of 2007, though they diminished somewhat after the U.S. Federal Reserve stepped in to facilitate JPMorgan Chase’s absorption of Bear Stearns (see Chart 2). Moreover, using a technique that examines the chances that if one bank fails others also will, the probability of multiple defaults has moved up significantly as well, suggesting as many as five banks could fail if one does. This means that contagion risks among major banks have also increased.

Making matters even worse

A number of recent trends have worsened the current situation. First, *there is an increasing dependence on quantitative risk measurement, especially for credit risks, without applying an overall approach to risk management.* In recent years, greater sophistication has been applied to the quantification of various risks—especially credit risks. Complex structured credit products are particularly difficult to assess because they contain not only credit risks but also liquidity risks and market risks. Many firms did not know how to classify them within their risk management systems because credit and market risks are often examined separately. And even when the complexity and interrelatedness of these risks were understood at the working level, that information was not communicated effectively or accepted at the top of the organization. Hence, in some cases, these risks slipped through the cracks.



Second, *the increased application of decision rules by financial institutions (mainly banks and hedge funds) based on marked-to-market prices has led to faster price declines through forced sales.* This kind of behavior can occur when marked-to-market valuations fall below some predetermined threshold—often set at a level to avoid further losses, such as stop-loss mechanisms or margining requirements, or set by a regulator to protect investors in, say, pension funds. While fair-value accounting is a useful method in normal times, it can create undue volatility in the perception of value if market prices are used during periods of stress. This, combined with hard-wired decision rules, can be destabilizing. As markets become illiquid and prices fall with a lack of active buyers, financial institutions mark or value their securities to the new lower prices, which in turn forces them to sell if thresholds are breached—adding to downward pressures.

Third, *the increased use of wholesale and short-term funding to support the “originate to distribute” business model has revealed a new vulnerability.* In this new business model, whereby loans are immediately packaged into securitized products and sold to other investors, (securitized) credit growth depends more on investors’ willingness to hold asset-backed paper and securities to finance the newly securitized assets and less on stable short- and long-term depositors in banks to finance traditional loans. This structural change means that less liquidity is held in the form of stable long-term deposits and, instead, banks depend on the “kindness of strangers.” The extent of this vulnerability has exacerbated the crisis, as normally well-functioning funding markets have dried up and credit creation via securitized products has slowed dramatically. The idea of distributing risks across the globe has not meant, as previously assessed, that local credit risks can be distributed to those best able to hold them but that, in the end, the banks that package the securitized products may end up holding the risk after all.

Incentives, incentives, incentives

So what can be done to fix the problems? In the real estate market, any realtor will tell a potential buyer that the three key elements to property investing are “location, location, location.” In the global financial markets, the answer is “incentives, incentives, incentives.” There are many incentives that affect financial market behavior—some are part of how unimpeded markets operate, others are imposed by rules and regulations. They are all hard to change.

Risk management problems. Unless the governance structure within major financial institutions changes so that both risk and business line managers have equal weight in senior management’s eyes, senior managers are unlikely to pay sufficient attention to the risk part of the risk-reward trade-off. Ideally, traders should be paid on a risk-adjusted basis, and management on a cyclically adjusted basis. This would eliminate the twin problems of risks not receiving sufficient attention in an upswing and of traders getting paid to take on bets that return high profits to the firm but are very risky (perhaps only revealed in the long run after bonuses are paid). Risk managers should be rewarded for good risk manage-

ment analysis—even if senior management does not act on their advice.

For these changes to happen, either shareholders have to insist on them as part of long-term performance (and thus must be long-term oriented themselves), or regulators have to impose them to address financial stability concerns that, because of their “public good” nature, would not otherwise be acted on by individual firms.

Originate-to-distribute model. At the peak of the cycle, originators of loans were able to pass them on to others without having to hold the loan risks themselves. Since they held no risk, they had little incentive to check the borrower’s ability to pay. The most blatant cases were the so-called ninja loans—loans requiring no income, no job, and no assets.

Incentives for more credit discipline could be established if the originator retained some of the risk of the loans’ future prospects—either through regulation or because potential investors in securitized products insist on it. Either way, it is difficult to achieve. There are many ways to offset the risk of the loans, even when they remain on the balance sheet. The use of derivatives is common, and some complex methods are difficult to tie to the loans themselves, making verification hard. Alternatively, the originator could be required to ensure that it is originating “good” loans (perhaps maintaining some prespecified loan-to-value ratios, or payment-to-income levels of the borrower), holding some of the risk on its balance sheet without hedging it, and monitoring the loans. This is time consuming to enforce and would require additional supervisory resources. That said, last summer the U.S. banking regulators issued new, stricter guidance for banks to rein in origination of the riskier types of mortgage loans, with many states also adopting the guidance for nonbank mortgage originators.

Off-balance-sheet vehicles. A related issue is the regulatory cost incentive to place assets and their funding in off-balance-sheet vehicles, where the risks are less transparent to the investors of the parent financial institution, as well as to supervisors and regulators. The move toward better capital adequacy rules for countries’ banks around the globe—known as the Basel II framework—may help mitigate the incentive for off-balance-sheet vehicles, but only if supervisors fully use their discretion to judge whether risks are truly transferred to such entities and whether the bank thus qualifies for capital relief. And even then, the rules for whether the appropriate amount of capital is being held against the contingent credit lines that support the off-balance-sheet entity will need to be reviewed along with those governing consolidation across subsidiaries.

Rating agencies. Because rating agencies are paid by the issuers that request ratings, they may have the incentive to rate the underlying security too highly to ensure that the issuer can attract buyers and, when conditions deteriorate, to avoid downgrading the rating too quickly so as to appear to have a stable and credible rating system. This adverse incentive is mitigated, at least to some degree, by a need to be accurate and realistic in the process of credit risk analysis so as to ensure credibility and final demand for the rated securities.

Following recent events, rating agencies have now agreed to try to develop “firewalls” between various parts of their business so that there are independent checks between the parts that do the initial ratings and those that are responsible for altering the ratings through time. This is a step in the right direction, but expertise on these complex products is scarce, and the economies of scale in information collection and analysis of complex products would suggest that maintaining two independent areas within one agency is costly and inefficient. Some have proposed that regulatory agencies take on the role of examining the rating agencies’ analysis and modeling as a second check on accuracy, but again the scarcity of expertise and extra expense will need to be weighed against the benefits.

Wholesale funding. Last, there is the incentive of financial institutions to protect themselves insufficiently against systemic liquidity events. The trend toward the use of wholesale funding has been motivated by a stable, low-interest-rate environment and a move toward more tradable assets on banks’ balance sheets. This means that wholesale funding is cheaper and more efficient—but only in “good times,” when it is easy to obtain. When times turn bad, investors who have been providing these funds flee to higher-quality assets, making it harder for banks to acquire solid funding. When things get bad enough, many major financial institutions assume that central banks will step into the void.

Of course, funding problems in an individual institution are never pleasant, but if most institutions are also facing the same difficulties, then the onus on protecting oneself is less pressing. Since institutions can never be sure that the funding problems they experience will elicit a systemwide central bank response, they have some incentive to improve their own liquidity risk management systems, but this will go only so far if they perceive that central banks will likely come to the rescue—as they have.

Thus, if systemwide stability is important and firms lack the incentive to fully provide sufficient liquidity protection themselves, some form of supervisory or regulatory oversight

will be needed. The form may vary by country and, perhaps, by type of financial institution but should be geared toward having the financial institution assume more of the cost of insuring against adverse liquidity events than at present.

One method would be to require institutions to hold more short-term liquid assets that they can use as collateral for loans either from other institutions or from the central bank. Such liquid asset ratios are common in many parts of the world but may need to be updated to consider new types of liquid instruments or higher ratios. Another route would be to pay more for insurance or contingent liquidity facilities. Banks already purchase such insurance, but there are questions about whether these contracts can be relied on in a systemic event. Thus, such insurance may be more efficient if it is publicly provided. Theoretically, the pooling of liquidity risk within a public institution, such as the central bank, may be preferable to privately provided insurance.

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Recent events have raised a number of difficult questions about how the subprime problem could have deteriorated to the point of threatening global financial stability. It will be even more challenging to find workable, practical ways to correct entrenched incentives and structures—both in the marketplace and in regulatory and supervisory systems—that have led to a deep disruption of financial intermediation to the potential detriment of the financial welfare of many countries’ citizens, many of whom are far from the epicenter of the crisis. ■

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References:

- International Monetary Fund (IMF), 2007, Global Financial Stability Report, October, World Economic and Financial Surveys (Washington).*
- , 2008, Global Financial Stability Report, April, World Economic and Financial Surveys (Washington).*



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