

## BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

STAFF UMBRELLA GROUP ON FINANCIAL STABILITY

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**Date:** September 20, 2007  
**To:** Board of Governors  
**From:** Staff Umbrella Group on Financial Stability  
**Subject:** Financial Stability Report

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In advance of the Board meeting on September 24, we are providing the latest Financial Stability Report prepared by staff at the Board and the Federal Reserve Bank of New York. Please note that daily financial markets data in the report are through Wednesday, September 19.

In this report, staff:

- review developments in domestic and international financial markets, with the focus on the spillover of market turmoil from subprime mortgage markets to other markets since July,
- present information on the effects of the turmoil on the large commercial and investment banks that market participants rely upon to make markets and finance positions, and
- review how the post-trade market infrastructure has coped with high volumes of trades and significant settlement volumes and assess the capacity of the infrastructure to cope with further shocks.

Also attached is a background memorandum on stress testing by central counterparties in U.S. financial markets.

## Report of the Staff Umbrella Group on Financial Stability

September 20, 2007

- At the time of the March Financial Stability Report, volatility in financial markets had increased in response to heightened concerns about deteriorating conditions in the subprime mortgage sector. Market conditions steadied in the spring, even as the performance of subprime mortgages continued to deteriorate. By July, however, it became apparent that holders of some highly rated senior tranches of securitizations and collateralized debt obligations (CDOs) backed by subprime mortgages would suffer losses. This realization undercut investors' confidence in the ratings of existing structured products backed by subprime mortgages and, increasingly, of those backed by other assets. Investors also began to question the rating agencies' ability to rate other complex financial products accurately. As a result, issuance of securitized instruments not backed by the guarantee of a government or government-sponsored entity became difficult or impossible. Of note, issuance of collateralized loan obligations (CLOs) declined notably at a time when a huge volume—as much as \$225 billion—of commitments to fund leveraged loans had been made with the expectation that they would be promptly sold to investors.
- By early August, growing awareness of the use of mortgages and residential mortgage-backed securities (RMBS)—including some subprime RMBS—as collateral for some asset-backed commercial paper (ABCP) issues made investors, including highly risk-averse money market funds, reluctant to roll over maturing paper in many segments of the \$1.2 trillion U.S. ABCP market. The pressures subsequently spread to the market for lower-rated unsecured CP as well. Issuers in the \$250 billion European ABCP market reportedly experienced even greater difficulties than ABCP issuers in the U.S.
- These developments in the ABCP market spilled over into other money markets. Treasury bill yields plummeted in mid-August as investors—especially money funds—sought a safe haven. Concerns about the funding implications of backlogged syndicated loan deals, actual and anticipated run-offs of ABCP, and the inability to securitize nonconforming mortgages led banks to bid up the federal funds rate and other interbank rates in the United States and Europe.
- The Federal Reserve and other central banks responded by supplying generous amounts of liquidity via open market operations. The Board also approved a 50 basis point cut in the primary credit rate and changes in discount window procedures allowing term lending for up to thirty days. While these actions were successful in reducing pressures in overnight markets, banks remained quite cautious and chary of term lending to other financial institutions, as evident in elevated interbank market rates.
- The FOMC cut the target federal funds rate by 50 basis points on Tuesday. Pressures in short-term markets, including the ABCP and term bank funding markets, had already eased a bit by the time of the meeting, and

showed some further improvement following the larger-than-anticipated policy easing. That said, a range of money markets remain under significant stress.

(b) (8)



- Based on publicly available information, major investment banks have significant exposures to leveraged loans. (b) (8)

(b) (8)



- Almost every post-trade infrastructure provider experienced high transactions volumes during August. For the most part, operational performance has been excellent. However, surges in OTC derivative trading volumes have set back industry efforts to reduce backlogs of unconfirmed trades. In July, confirmations outstanding more than thirty days rose sharply for both credit and interest rate products; for credit derivatives, these aged confirmations were double their level in June. With respect to financial performance, price volatility has resulted in substantially larger margin calls by clearing and settlement systems, but market participants have met those obligations.

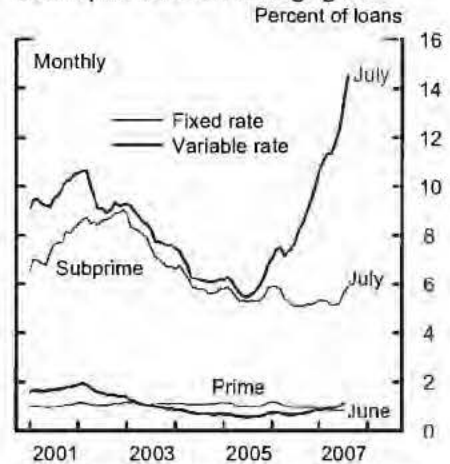
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**Residential mortgage markets**

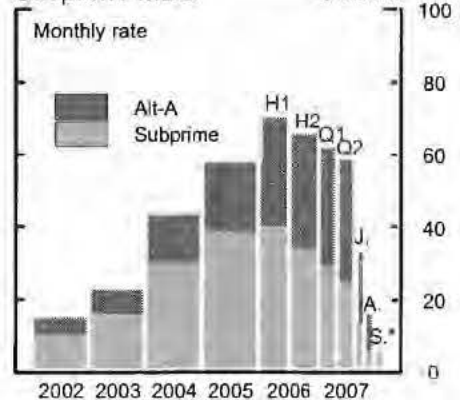
- The performance of subprime mortgages has continued to deteriorate since March. By the summer, lenders found it almost impossible to securitize those mortgages, and, as a result, originations slowed dramatically and several large banks and thrift stopped making subprime loans. Some borrowers who would have been classified as subprime a year ago are now using private mortgage insurance to qualify for conforming loans—that is, loans that can be purchased by the housing GSEs. Nonetheless, this segment of borrowers will likely continue to find credit expensive and difficult to obtain in coming months.
- In late July, concerns broadened to encompass other nonconforming products, such as near-prime and prime jumbo mortgages, even as the credit performance of those mortgages remained relatively solid. Issuance of RMBS backed by such loans has slowed to a trickle.
- Some prime borrowers seeking jumbo mortgages are getting loans from depository institutions, which plan to hold them on their books. These borrowers are paying an unusually wide premium over rates on conforming mortgages. Moreover, underwriting standards tightened and anecdotal reports suggest that jumbo borrowers are finding it difficult to obtain loans with low downpayments or high payment-to-income ratios.
- Starting in late July, traders began reporting significant uncertainty about the secondary market prices of private-label RMBS. In some cases, asset managers have had to override end-of-day prices

**Delinquencies on mortgages**



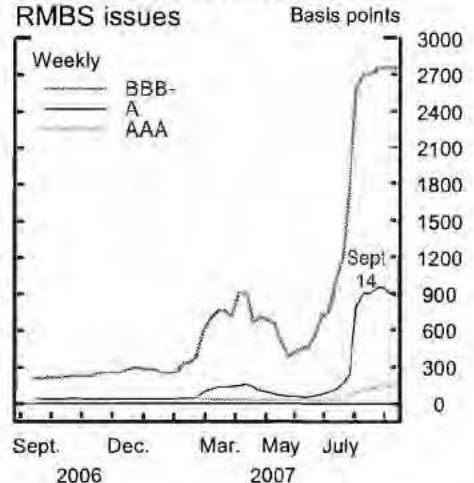
Note. Percent of loans 90 or more days past due or in foreclosure. Prime includes near-prime mortgages.  
Source. First American LoanPerformance.

**Gross issuance of Alt-A and subprime MBS**



\*Month to date at a monthly rate; Alt-A not yet available.  
Source. Inside Mortgage Finance MBS database, Merrill Lynch.

**Spreads on new subprime RMBS issues**



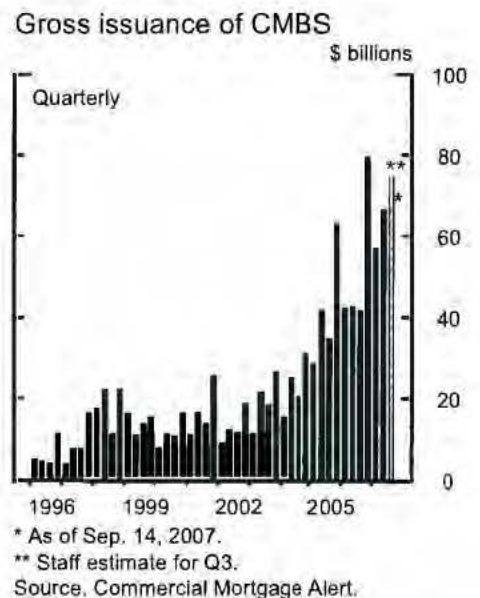
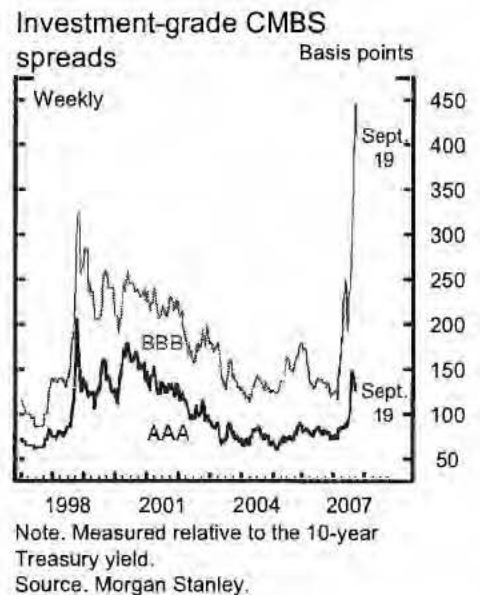
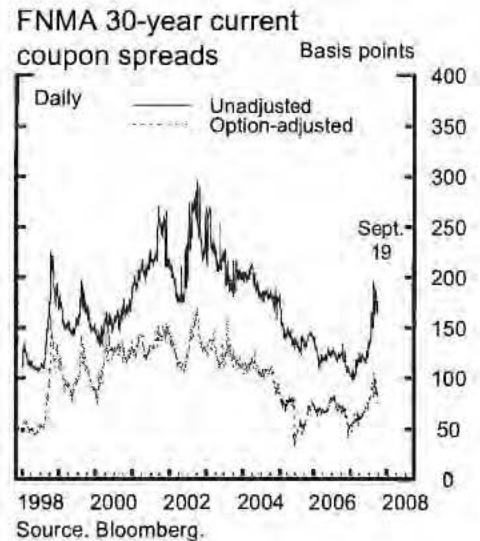
Note. Measured relative to Libor.  
Source. Trader estimates provided by Merrill Lynch.

provided by subscription pricing services as these services appeared to be marking down RMBS prices too slowly given market conditions. The price uncertainty seems to reflect, at least in part, investors' skepticism about current ratings and, more broadly, about the rating agencies' ability to rate RMBS in an environment of declining house prices.

- Traders have also reported very large amounts of seasoned RMBS for sale of late. In a sign that holders of those securities are in strong need of liquidity, some of these bid lists request immediate cash settlement—a significant departure from typical industry practice. While investors are willing to buy—at a discount—the higher-rated tranches of older and of the few newly issued RMBS, at this time none appear willing to buy the lower-rated tranches of new deals.
- Amid all the turmoil in the market for nonconforming products, the market for conforming mortgages remains largely unscathed. Borrowers have no difficulties getting loans, and issuance of agency MBS has continued unabated, albeit at higher spreads than in recent years.

**Commercial mortgage markets**

- Secondary markets for commercial mortgages have been hit by a milder form of the anxiety afflicting secondary markets for residential mortgages. Spreads over swaps on BBB-rated CMBS have widened about 150 basis points since last month and 250 basis points since last February; spreads on AAA-rated CMBS also rose substantially. The widening of spreads has reportedly resulted in an increase in rates on commercial mortgages originated for CMBS pools, which in recent years has accounted for 30 to 40 percent of all commercial mortgage originations.
- CMBS issued so far in the third quarter are backed mainly by loans originated in the first half of the year, before the recent turmoil. The announced pipeline for CMBS issuance indicates that there



should be a substantial slowdown in the fourth quarter. In part, with funding costs rising, borrower demand has slackened. However, reports indicate that tighter underwriting standards by originators and a tougher stance by rating agencies have also affected nonprime terms for commercial loans.

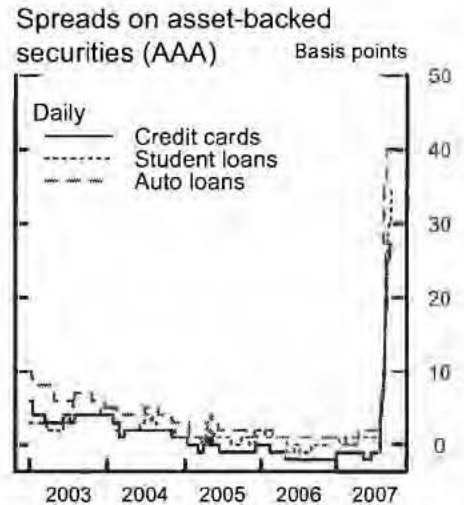
**Other asset-backed securities markets**

- Spreads on securities backed by assets other than mortgages and leveraged loans, which had remained low until recently, have widened of late, although the extent of their moves was much smaller. Still, spreads on AAA securities backed by credit cards, prime auto loans, and student loans have risen 25 to 35 basis points since late July and reached levels not seen since at least 1994. Spreads on BBB tranches backed by credit card receivables widened more—about 100 basis points—but are still lower than the peaks reached in 2002 and 2003.

**Commercial paper**

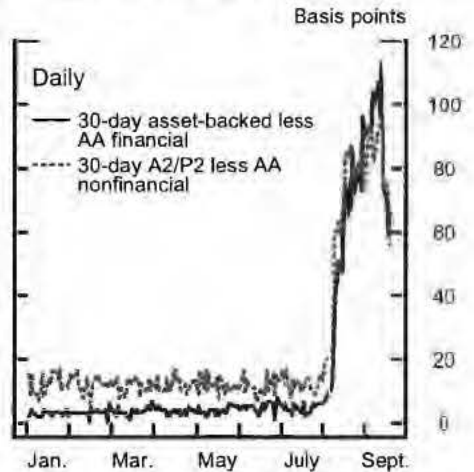
- Liquidity in the CP market deteriorated markedly beginning in late July. Initially, concerns were confined to the exposure of ABCP programs to subprime mortgages, but subsequently investors began to shy away from ABCP backed by other assets and from the unsecured paper issued by lower rated firms.
- Spreads on ABCP and lower-rated unsecured nonfinancial paper soared in early August but narrowed noticeably in the first half of September. Still, spreads remain high by historical standards. Meanwhile, yields on AA-rated unsecured paper have generally traded at or below the target funds rate.
- Some issuers have been unable to roll over their paper. While a few have been able to sell a portion of their assets to their liquidity providers or sponsors, others have defaulted, exercised the option to extend maturity, or drawn on their bank backup lines of credit.

As of September 19, about \$16 billion of paper was in default or extended. Total unsecured CP

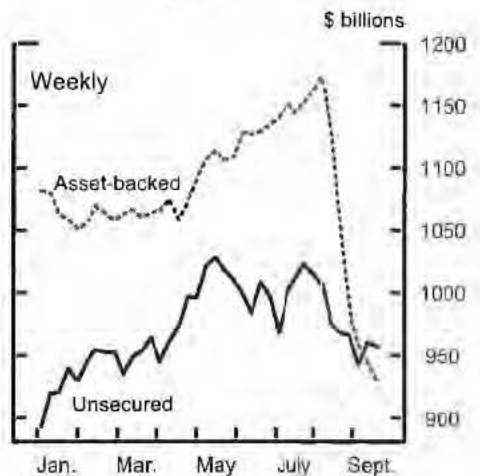


Source. JP Morgan.

**Commercial paper spreads**



**Commercial paper outstandings**



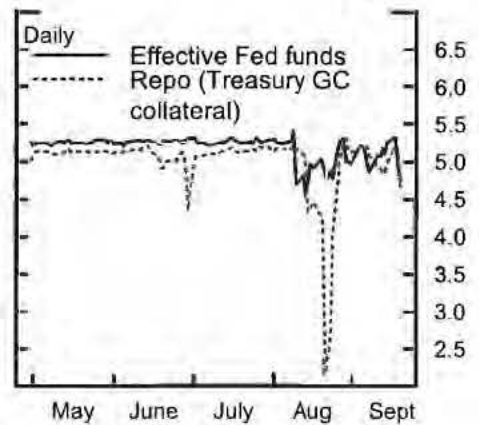
plummeted about \$250 billion (21 percent) during that period. Issuance has been especially difficult for ABCP with terms longer than a few days, but some programs have been able to place paper of longer maturity as market conditions have eased a bit over the last week or two.

- Structured investment vehicles (SIVs) and other types of securities-arbitrage conduits (SACs) were designed to purchase long-term assets and fund them in part or in whole with short-term ABCP.<sup>1</sup> The jump in ABCP rates has put pressure on SIVs and SACs and a few of them have defaulted or wound down their operations. The contraction of such programs has reduced the demand for securitized assets.

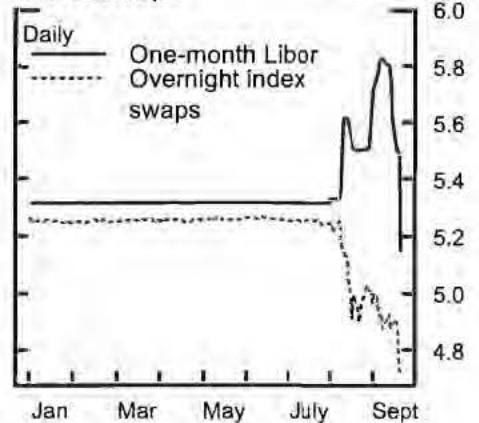
**Other short-term funding markets**

- The overnight federal funds market tightened considerably in early August as banks evidently became concerned about their liquidity. In response, the Desk added large amounts of balances through open market operations. The effective federal funds rate remained below the target on most days through the remainder of August and into September, although over the past week or so it has traded closer to the target. Trading volumes in the funds market have been elevated and the market has functioned smoothly to date.
- Despite the generous liquidity injections by the Desk in the overnight market, term federal funds rates remained much higher than typical amid very poor liquidity, reflecting heightened concerns about liquidity and credit risk. Term libor rates also spiked and their spreads to comparable-maturity overnight index swaps remain much higher than normal.
- On August 17, the Board approved a 50 basis point cut in the primary credit rate and changes in discount window procedures allowing term lending for up to thirty days. Several large banks, including the four largest U.S. banks and some U.S. branches of large foreign institutions, borrowed at the window. A number of small banks also borrowed, but mostly small amounts. Even if borrowing has not been substantial, collateral posted at the window rose sharply in August, with depositories expressing considerable interest in posting ABCP.

Overnight money market rates  
Percent



One-month Libor and overnight index swaps  
Percent



<sup>1</sup> According to a Moody's report issued on September 5, SIVs held around \$400 billion of assets, of which 43 percent were debt of financial institutions, 23 percent were RMBS, 11 percent were CDOs, and 23 percent were other assets (mainly ABS).

- Elevated demand for Treasury securities pushed down Treasury RP rates, and between August 21 and 23 overnight RPs traded up to 250 basis points below the funds rate. In response, the Desk eased terms for its securities lending program and stepped up the redemption of bills from the SOMA portfolio. Of late, the spread to funds has returned to a more typical range.
- In recent weeks, term bank funding markets have become somewhat more liquid, and spreads have narrowed, particularly for highly creditworthy institutions. Nonetheless, those markets are not functioning normally and spreads for most banks remain elevated.

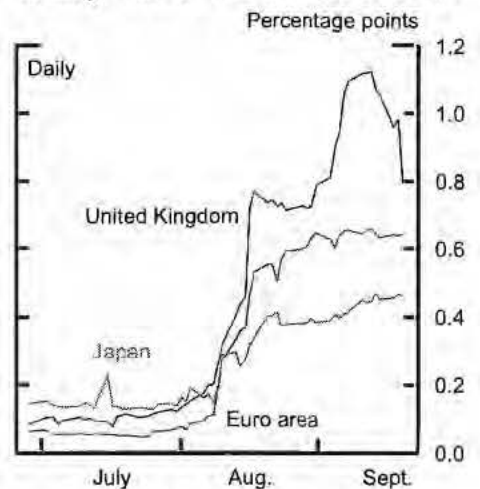
**International Developments**

- Unusually high term funding spreads have also been evident in Europe, and, to a lesser extent, in Japan. As in the United States, these spreads reflect banks' concerns about their liquidity commitments to ABCP programs and their accumulating inventory of leveraged loans. Heightened uncertainty about their funding needs has made banks reluctant to lend to one another for maturities of more than a few days. Overnight rates have been unusually volatile in Europe and Canada despite the injection of more liquidity than normal.
- In Europe, the CDS premiums of banks with greater exposure to ABCP have, on average, widened relative to those of banks with lower exposure. However, even for the most exposed banks, CDS premiums are not especially high and do not suggest a high chance of default. Bank equity prices exhibit a similar pattern, with only a modest average decline of 7 percent since the end of June and minimal differences related to ABCP exposure. (b) (8)

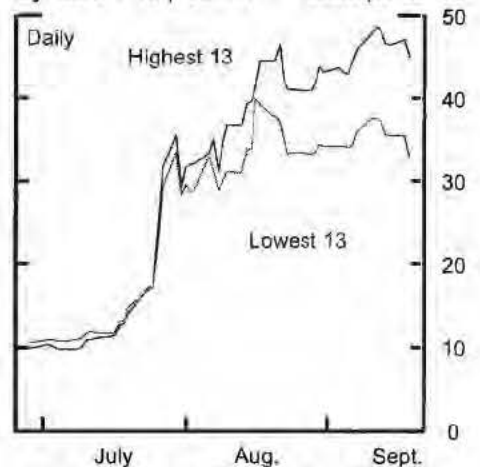
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- Difficulties in mortgage-related funding markets and term bank funding markets put substantial pressure on a large British bank, Northern Rock, which specializes in market financed mortgage lending. On September 14, the U.K. Tripartite Authorities announced that the Bank of England would provide emergency liquidity assistance to

90-day interbank rate minus OIS rate



European bank CDS premiums by ABCP exposure\* Basis points

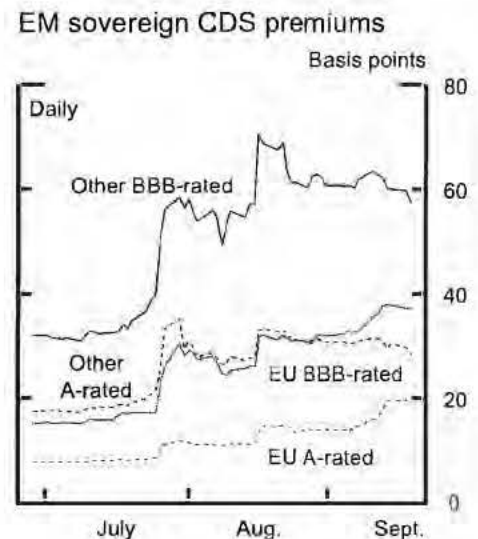
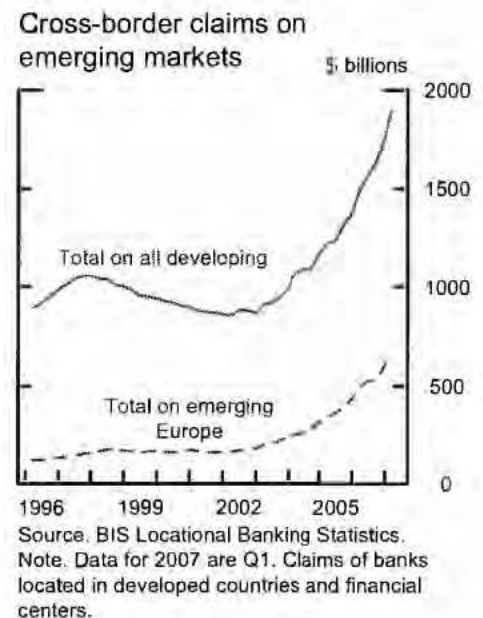
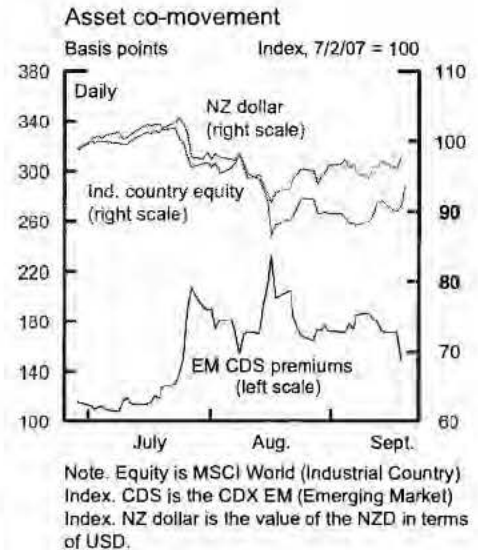


\*Banks are ranked by ABCP sponsorship as a percent of tier 1 capital. The sample includes 39 large and mid-sized European banks.



the bank, but this announcement appeared to trigger a run by depositors. The run continued until the authorities announced that all Northern Rock deposits would be backed by the government.

- Recently, there have been unusually strong co-movements in different asset classes across a wide range of countries. For example, in late July and mid-August, global equities and high-interest-rate currencies dropped sharply, while CDS premiums on emerging market sovereign bonds rose substantially and the Japanese yen (not shown) appreciated. These asset classes have few fundamental factors in common. The most plausible explanation is that investors were pulling back from risky positions of all types, including carry trades between low- and high-interest currencies.
- Bank loans to emerging market economies have grown at an annual rate of about 20 percent over the past four years. Particularly striking has been the rise in loans to emerging Europe, which have nearly quadrupled since 2002. Western European banks have financed the bulk of the lending to emerging Europe. This lending has been used to fuel a boom in household borrowing in the region. The risks associated with this borrowing may be particularly high given that most borrowers have little or no credit history and in some countries more than half of household loans are in foreign currencies.
- Markets appear to be less concerned about financial risks in emerging European countries that have recently joined the European Union (EU) than in other emerging markets. For example, sovereign CDS premiums were lower in new EU members than in comparably-rated emerging market countries outside of the EU prior to the recent events, and the increases in recent weeks have been smaller for EU members than for other emerging economies.

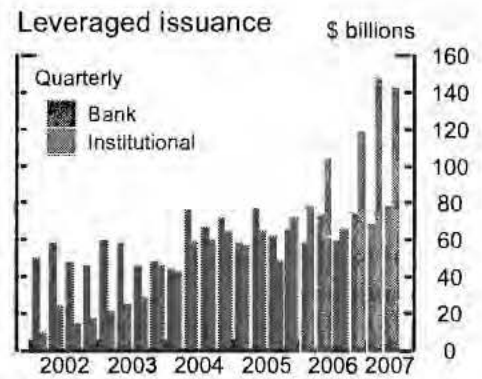


**Leveraged loan market and leveraged buyouts**

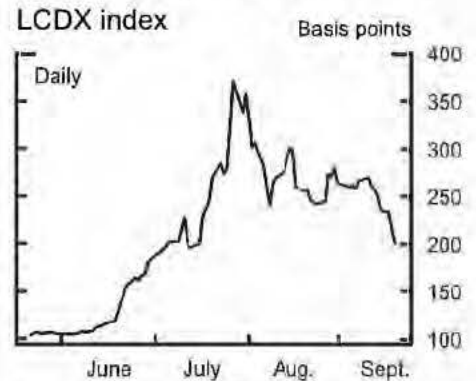
- Fueled by strong merger and acquisition activity and leveraged buyout (LBO) financing, as well as accommodative lending standards and terms, issuance of leveraged loans was extremely strong in the first half of 2007, totaling about \$430 billion. Of that, about 70 percent was accounted for by loans provided by non-bank lenders.
- Since mid-June, however, conditions in speculative-grade corporate credit markets have tightened considerably and the pace of lending has slowed substantially. Several leveraged loan issues intended to finance LBO deals were postponed or restructured, reportedly in response to investors' demands for tighter terms. In some cases, as non-bank lenders withdrew from the market, underwriters were forced to fund loans on their balance sheets as they were unable to distribute the loans to investors.
- Tighter conditions manifested themselves in loan spreads as well. Although fundamentals in the corporate sector appear to have remained good, the implied spread on the LCDX—an index of 100 equally weighted loan credit default swaps—rose more than 250 basis points between mid-June and late-July, though it has fallen back a good bit since then.
- Spreads on lower-rated tranches of CLOs widened markedly in July and August, while CLO issuance slowed notably. Reduced demand for loans from CLOs could have significant implications for M&A and LBO financing, as these vehicles are said to have bought a significant portion of past leveraged loan issues. However, CLO issuance appears to have picked up in September.

**Corporate bond and CDS markets**

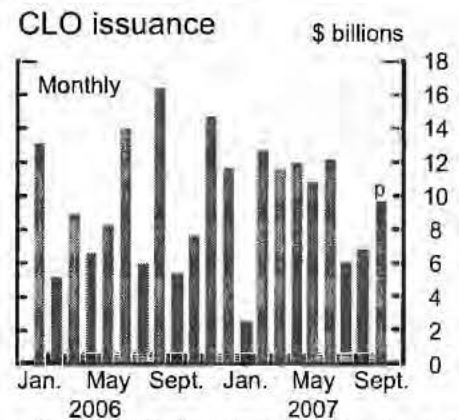
- Corporate bond markets functioned reasonably well throughout the ongoing market turbulence, even though spreads rose across the rating spectrum in the summer. A proxy for bid-asked spreads on corporate bonds widened in July and August and signs of liquidity



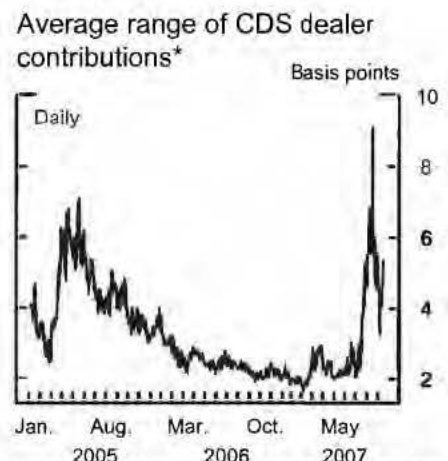
Source: Reuters Loan Pricing Corporation.



Note: The index began trading on May 22, 2007. Source: Markit.



p Projected for the whole month using data through September 14. Source: JPMorgan.



\*Adjusted for change in underlying data reporting. Note: Data shown is Investment-Grade: Financial. Source: Markit.

strains in the market for credit default swaps also emerged, as the average number of dealers providing quotes on any given reference entity declined noticeably while the average range of those quotes widened sharply. In recent weeks, liquidity conditions appear to have improved but are still not back to normal levels. Speculative-grade bond issuance declined sharply in July and August while investment-grade issuance remained robust.

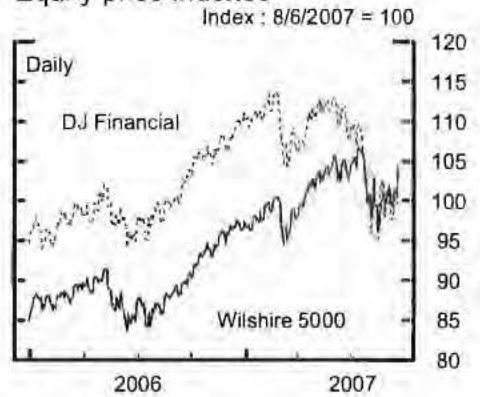
**U.S. Equities**

- After tumbling in late February as concerns about the condition of some sub-prime lenders and the economic expansion more generally surfaced, broad equity price indices rose steadily in the spring supported by continued strength in corporate profits and optimism spurred by a steady stream of buyout announcements.
- However, prices declined sharply in mid-July amid the reignited concerns about sub-prime mortgage performance and credit risk. The net decline was particularly pronounced for firms in the financial sector.
- Since early August, equity prices have been highly volatile, but rose about 3 percent on net. Option-implied volatility on the S&P 500 spiked to four-year highs in mid-August and has remained elevated since.

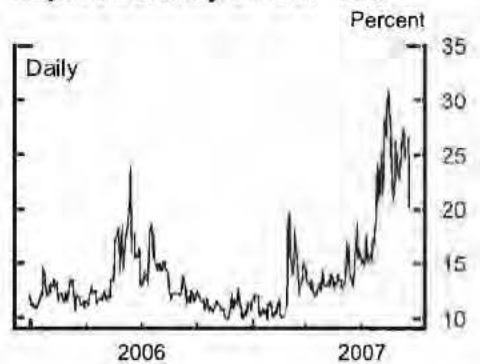
**Monetary policy expectations and Treasury market conditions**

- Although extracting clear signals about policy expectations from futures quotes is particularly challenging in the current turbulent environment, the estimated path of the expected federal funds rate moved down sharply over the last two months as market participants focused on the macroeconomic implications of the deterioration in credit conditions. The FOMC rate cut on Tuesday was somewhat larger than expected, and monetary policy expectations declined a bit further on the announcement. Investor uncertainty about the future course of policy rose substantially over

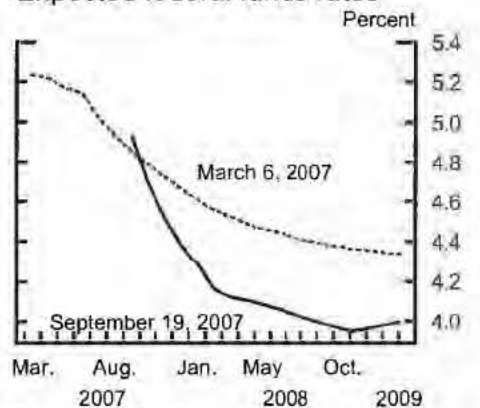
Equity price indexes



Implied volatility on S&P 500

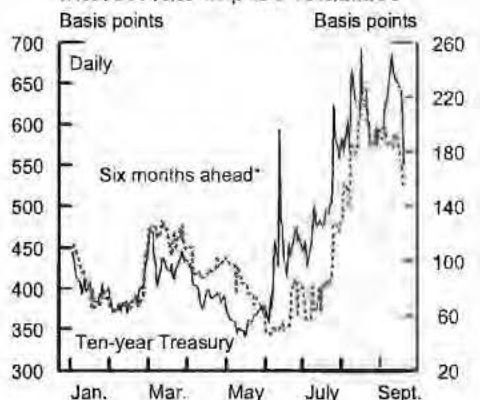


Expected federal funds rates



Note. Estimated from federal funds and Eurodollar futures, with an allowance for term premiums and other adjustments.

Interest rate implied volatilities



\*Width of the 90 percent confidence interval for the funds rate six months ahead derived from options on three-month Eurodollar futures.

the summer but has declined somewhat after this week's policy move.

- Treasury yields fell sharply amid the revision to policy expectations and flight-to-quality flows. For a time in mid- to late August, there were reports of very heavy inflows into money-market mutual funds that invest only in short-term Treasury securities. Treasury bill yields plummeted starting in mid-August and have bounced back only partially since.
- On-the-run liquidity premiums for Treasury securities widened noticeably in August but remained well below the levels reached in 1998. While liquidity in the Treasury bill market was at times reported to be very poor, bid-asked spreads for on-the-run Treasury coupon issues rose only modestly and trading volumes on the BrokerTec electronic trading platform were elevated. Both realized and options-implied volatility on Treasury securities rose to multiyear highs.

Ten-year Treasury on-the-run premium



Note. Spread of yield for on-the-run ten-year Treasury note over smoothed off-the-run yield curve.

**Financial institutions**

- Dozens of mortgage lenders have closed or filed for bankruptcy in recent months. Among the most prominent of the failed lenders were New Century, which specialized in subprime loans, and American Home Mortgage, which specialized in prime and alt-A loans.
- Financial markets have been concerned about the viability of Countrywide, the largest U.S. mortgage originator and servicer. When the mortgage securitization market virtually shut down in July, the company experienced substantial difficulties in funding its mortgage loans, the company's CDS spreads shot up to a peak of more than 600 basis points in mid-August, and its stock price plunged. Countrywide was forced to draw down its \$11.5 billion backup lines of credit with several banks. Bank of America subsequently provided liquidity by purchasing \$2 billion of the mortgage lender's preferred stock, and Countrywide was able to line up an additional \$12 billion in secured financing in mid-September. These developments contributed to an easing in investors' concerns and the lender's CDS spreads retraced a substantial part of their earlier

Countrywide

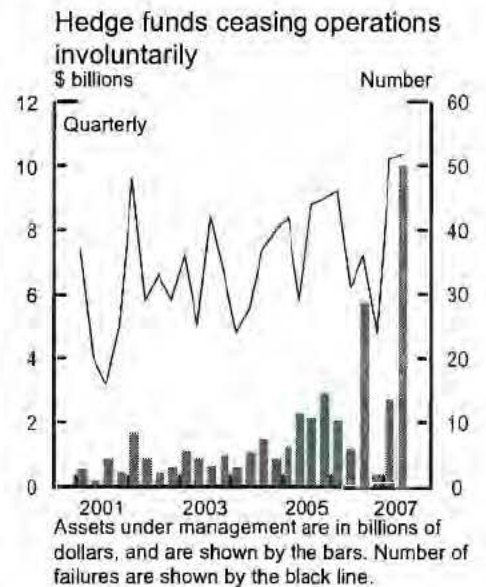
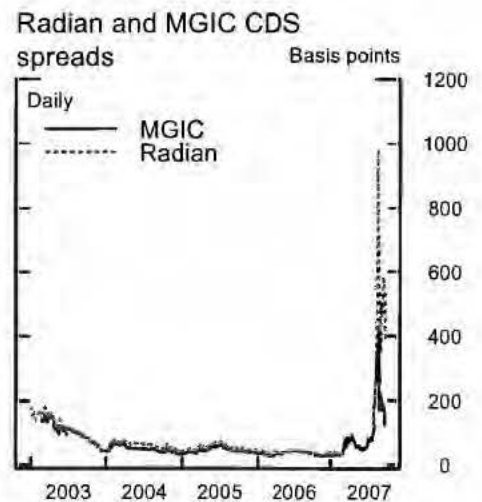
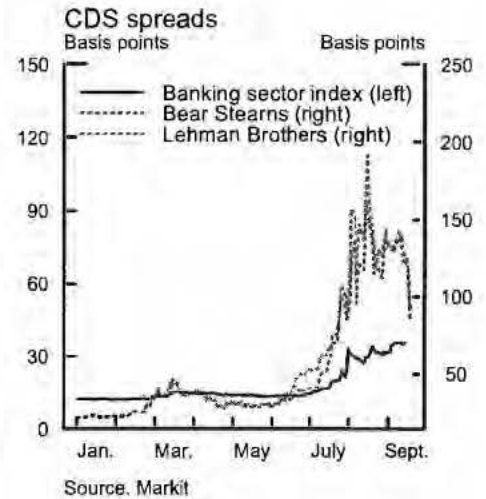


rise. Recent data on deposits at Countrywide FSB show some runoffs that may be due to weakened customer confidence in the thrift. Deposit outflows have likely been mitigated by the above-average rates that the thrift has apparently been offering on its CDs.

- More broadly, commercial and investment banks involved in the mortgage and structured credit markets have experienced stock price declines and increases in CDS spreads this summer, although the sizes of these moves were limited compared to those of Countrywide.
- Providers of private mortgage insurance have also seen CDS spreads rise. Investors have expressed particular concern about the financial health of Radian, and to some extent about MGIC, owing in part to losses resulting from their joint investment in a subprime mortgage vehicle. A planned merger between these two institutions has been canceled.

**Hedge funds**

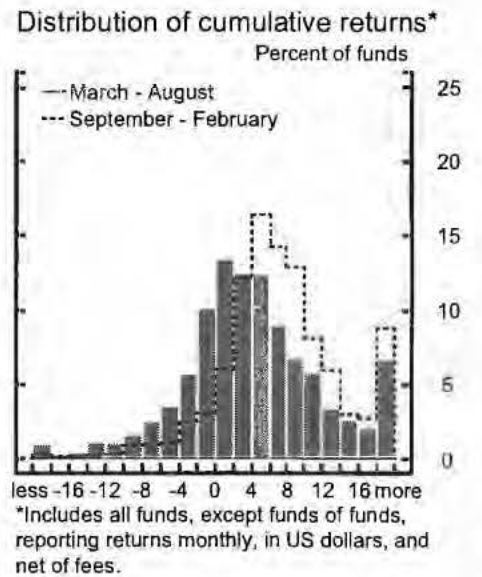
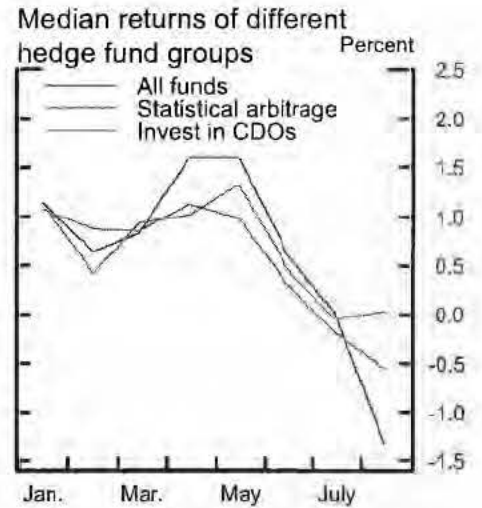
- The recent turbulent conditions in financial markets have forced a number of high-profile hedge funds to scale back or halt their operations. According to the TASS database—which is thought to include a significant fraction of all existing hedge funds—the number of funds that involuntarily ceased their operations in recent months has been elevated and some of those funds have been larger than is typical.<sup>2</sup>
- The performance of hedge funds investing in structured finance credit products, particularly those backed by subprime mortgages, was especially poor in recent months. In addition to the well-publicized failure of two funds managed by Bear Stearns, more than half of the funds investing in CDOs that are included in the TASS database had negative returns in July and August, including



<sup>2</sup> All funds that stop reporting to TASS are included in a “graveyard” database. Funds are considered to have involuntarily ceased operations based on notes provided in the database that describe the reason why the fund stopped reporting.

several of the largest funds. However, the size of the losses for most of those funds appears manageable.

- Media reports also often pointed to large losses at funds that engage in so-called statistical arbitrage trading strategies. However, while some large funds in that category certainly suffered double-digit negative returns in recent months, TASS data suggests that, on the whole, the median performance of these funds in August was better than that of the rest of the industry.
- Overall, the median cumulative return for hedge funds reporting in U.S. dollars over the March-to-August period was 3.6 percent (not annualized), down from the median return for the preceding six months and well below the 8.7 percent return on the S&P 500 over this period. The largest funds slightly underperformed the rest of the industry. Performance for the month of August was especially poor.



**Impact of market illiquidity on core financial institutions**

- The seizing up of various markets that has been described in the previous sections has created some significant credit and liquidity exposures for the large commercial and investment banks that market participants rely upon to make markets and finance positions. This section presents available information on those exposures and assesses the potential impact on the institutions' earnings, capital, and balance sheet capacity.

*Commercial Banks*

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(b) (8)



*Investment Banks*

- We have not discussed major investment banks' exposures to recent market developments with their senior management. Rather, our analysis of their exposures and their potential impact on the firms is based on publicly available information and discussions with SEC staff. Consequently, our conclusions are less definitive and subject to greater uncertainty.
- In recent years, the five major investment banks have responded to increasing competition from large global banks in underwriting activities by assuming significantly larger commercial credit-related exposures, especially off-balance sheet lending-related commitments. Total credit exposures have grown by about 70 percent since 2005, while off-balance credit-related commitments have nearly doubled. In addition, there has been a compositional shift within off-balance sheet commitments; non-investment-grade commitments have grown by almost 300 percent (and now account for 22 percent of total credit exposures), whereas investment-grade commitments have grown by about 50 percent.
- Of particular interest in the current environment are these firms' exposures to leveraged lending. According to league tables, the five investment banks served as lead arrangers for about 20 percent of leveraged loan deals by volume in the first half of 2007. For the four firms that recently reported third quarter results, exposures to leveraged lending reportedly totaled \$107 billion, which is equivalent to less than 1 percent of aggregate assets. In terms of earnings, market commentaries suggest that some underwriters might have used the LCDX index to hedge their exposures to the pipeline of leveraged loans. (b) (8)

Investment bank credit exposures

	Growth since 2005 (%)	\$ bil. 2Q '07
<b>On-balance sheet loans</b>	32	146
Consumer	-5	46
Commercial	61	100
<b>Off-balance sheet credit commitments</b>	99	485
Investment-grade commercial lending	52	149
Non-investment-grade commercial lending	278	166
Other commitments	67	170
<b>Fair value of OTC derivatives</b>	38	142
<b>Total exposures</b>	69	773

Source. Company reports.

U.S. leveraged loan lead arrangers

Company	Percent*
JP Morgan	22
Bank of America	14
Credit Suisse	10
Citi	9
Deutsche Bank	8
Goldman Sachs	6
Merrill Lynch	5
Wachovia	4
Lehman Bros.	4
UBS AG	3
Bear Stearns	2
Morgan Stanley	2

\*Market share by volume of deals. Source. League tables, Reuters Loan Pricing Corporation.


Other pipeline risks of concern

(b) (8)


relate to these firms' underwriting of private label MBS/ABS; league tables show that they underwrote 29 percent of such securities in 2006, totaling \$450 billion.

- Another significant set of exposures relates to structured credit products, which have entailed greater market risk in light of the recent repricing of risk and investors' increased aversion to complex instruments. Although we do not have data on such exposures, these products usually must be marked to model, and under accounting rule SFAS 157 instruments that are marked to model are reported as level III trading instruments. As of the second quarter of this year, the five investment banks reported holding \$174 billion of level III instruments. This amount represented roughly 10 percent of total financial instruments reported at fair value, and 120 percent of equity of these five institutions.
- Capital ratios based on equity alone could be interpreted as indicating some weakness in these firms' capital positions. Growth of these firms' equity capital levels has been held down by the increasing amount of share buybacks that they have undertaken over the last several years. All of the major firms have repurchased large quantities of their own shares, both in an effort to boost return on equity (ROE) and to offset the dilutive effects of increased stock-based compensation. Consequently, loss absorption capacity as measured by the firms' tangible net worth to total assets has declined from 4.3 percent in 2003 to 3.3 percent in the second quarter of 2007.

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**Performance of the post-trade infrastructure during the recent market turmoil**

*Turmoil has produced high volumes of trades and significant settlement volumes*

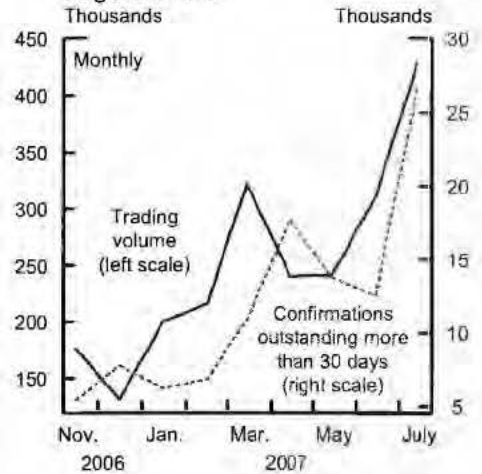
- Almost every post-trade infrastructure provider experienced high transactions volumes during August. Trading of equities was very heavy, and these deals flowed through to settlement systems. Exchange-trading of derivatives products also was particularly heavy. Record numbers of securities options contracts were cleared in July and August, peaking on August 16. Volume was very strong in futures, with total August volume up thirty percent over that of July. CLS, which settles foreign exchange trades, experienced record settlement volume on September 19, surpassing the records set in August and early September. These volume levels were some 25 percent higher than CLS's previous record on January 16.
- With a few exceptions, operational performance of clearing and settlement systems has been excellent. The Depository Trust Company (DTC), National Securities Clearing Corporation (NSCC), Fixed Income Clearing Corporation-Government Securities Division (FICC-GSD), Chicago Mercantile Exchange clearing house (CME), and Options Clearing Corporation (OCC) have not experienced operational problems, even on days of very high volume.
  - Deadlines were extended on some days to enable firms to process the heavy volumes in futures markets.
  - DTC handled issuer defaults (and extensions) in the CP market through normal procedures; affected participants settled their daily obligations without incident.
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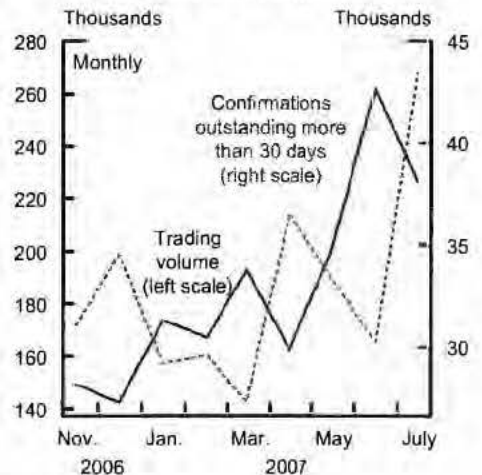
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- Throughout the spring and early summer, volumes of OTC derivatives trades grew rapidly in all product categories, and growth was particularly notable in the credit category. Total monthly deal volume of credit derivatives in July (the latest available data) was almost twice February's volume. Interest rate and equity deal volumes were about 35 percent higher in July than in February.
- The strong pick-up in deal volume has set back industry efforts to reduce backlogs of confirmations, particularly during the recent market turmoil. In July, confirmations outstanding more than thirty days rose sharply for both credit and interest rate products; for credit derivatives, these aged confirmations were double their level in June. (Despite this deterioration in performance, aged confirmations for credit derivatives are still significantly below their level in 2005 when efforts to reduce them began.) As more deals enter the pipeline, the industry will face a continuing challenge to address current confirmation backlogs and keep them from rising further.
  - To help manage backlogs, dealers report hiring additional staff and asking staff to work longer hours. Dealers also are mitigating their risk while confirmations are outstanding by verbally affirming the key economic terms shortly after the trade.
  - A substantial portion of volume owes to novations, and dealers are working to improve novation processing.

Credit derivatives at fourteen large dealers



Interest rate derivatives



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*Capacity to cope with further shocks*

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- (b) (8)

- *Financial Safeguards at CCPs.* Many financial markets seek to mitigate risks in clearing and settlement through creation of CCPs. A CCP is exposed to the risk of nonperformance by both buyer and seller because of its role as guarantor of the transaction. Nonperformance may manifest itself as counterparty credit risk (the risk that a participant will not settle obligations when due or at any time thereafter) and liquidity risk (the risk that a participant will settle obligations late). The basic elements of a CCP's financial safeguards are margin requirements, a clearing fund, and a liquidity facility. Margin is posted by a participant to cover losses in the event of his default. A clearing fund is a pool of resources used to cover losses in excess of margin; these additional resources are necessary because margin is not designed to cover all price movements. A liquidity facility enables a CCP to continue meeting payment obligations to non-defaulting participants while liquidating the positions and margin assets of the defaulter.

- An important determinant of the capacity of a CCP to cope with shocks is the rigor of its stress testing procedures, which it uses to evaluate the implications of extreme market conditions for components of its financial safeguards. Key choices in designing the tests are the assumed market conditions and the assumed number, and size, of participants that default. Market conditions are generally chosen to be "extreme yet plausible," and the participant that presents the largest exposure to a CCP is assumed to default.

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