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# Economic Letter

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FEDERAL RESERVE BANK OF DALLAS

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## **From Complacency to Crisis: Financial Risk Taking in the Early 21st Century**

*by Danielle DiMartino, John V. Duca and Harvey Rosenblum*

During the first half of this decade, the belief that new financial products would adequately shield investors from risk encouraged financial flows to less credit-worthy households and businesses. By late 2006, U.S. financial markets were flashing warning signals of a potential financial crisis.

In a sign that investors had become too complacent, risk premiums had all but vanished in junk bond and emerging-market interest rate spreads. Then, conditions changed abruptly. In the important and usually stable market for asset-backed commercial paper, premiums on three-month paper over Treasury bills jumped from 0.17 percentage point in February 2007 to 2.15 points in August. Meanwhile, rising subprime mortgage defaults led investors to abandon their sanguine beliefs about the risk of many mortgage and nonmortgage products.

The backdrop for these events was a period of macroeconomic stability that fed

*From 2002 through the early months of 2007, differentials between risk-free and risky assets narrowed significantly.*

**Chart 1**  
**Spreads Between Junk and Treasury Bond Yields**  
**Jump Sharply in Spring 2007**



NOTE: Shaded bars indicate recessions.

SOURCES: Federal Reserve Board; Moody's Investors Service.

complacency about risk. This relatively benign economic environment, when combined with the new, structured financial products, increased financial flows to nonprime mortgage and business borrowers. The result was an overeager acceptance of risk taking that began correcting itself only after mounting subprime mortgage defaults reverberated through the broader financial markets.

### The Rise of Complacency

Investors have long expected to be compensated for taking greater risk with higher expected returns. A vital role of financial markets is to correctly price risk so investors can make informed decisions. From 2002 through the early months of 2007, however, differentials between risk-free and risky assets had narrowed significantly.

In mid-2007—the most benign point in the current credit cycle—junk bonds paid about 3 percentage points above comparable-maturity Treasuries, down from the historic average of around 5 points, a level last seen in

late 2003 (*Chart 1*). Shrinking the spread were greater macroeconomic stability and new products designed to divide risk, which lowered the premiums demanded for investing in various instruments. To understand this, it's helpful to look at three aspects of risk—default risk, interest rate risk and changes in investors' appetite for risk.

**Default Risk.** This is the possibility that investors may not get back their principal at maturity or receive interest payments in full or on time. Default risk reflects the characteristics of a firm or its industry and the possibility of recession. Volatile economic growth, for example, can adversely affect firms' and households' ability to service debt.

At one end of the spectrum are default-free Treasury bonds. At the other is below-investment-grade corporate debt, which typically pays a sizable premium above Treasury yields to compensate for added risk. In the middle is investment-grade corporate debt, which usually pays a smaller pre-

mium above Treasury rates because of its moderate risk.

**Interest Rate Risk.** Swings in interest rates affect the present value of future stock and bond payments to investors. In an uncertain environment—where rates fluctuate greatly because of instability in prices or economic growth—the payments' present value is more variable, rendering stock and bond prices more volatile.

**Changes in Risk Appetite.** Investors sometimes accept relatively low premiums to take on a given level of risk; other times, they demand higher premiums for the same risk. The primary determinants are default and interest rate risks, but liquidity risk can also lower the price of some assets when trading thins during periods of great uncertainty. At such times, the prices of some assets can fall sharply with little or no warning signs. Hence, overall investor appetite for risk depends on market psychology.

While it's difficult to break down premiums into perceived risk and the market price of risk, evidence sug-

gests that swings in premiums and discount factors have a big impact on returns beyond what might be justified by changes in asset fundamentals, such as profit growth and the risk-free Treasury yield.<sup>1</sup> For this reason, investors face the possibility that an asset's market price could fall if premiums rise. Even if some individual investors remain calm during unsettled periods, market values may plunge if others suddenly demand higher premiums. When this occurs, investors generally sell high-risk assets and buy low-risk assets, a phenomenon known as a flight to quality.

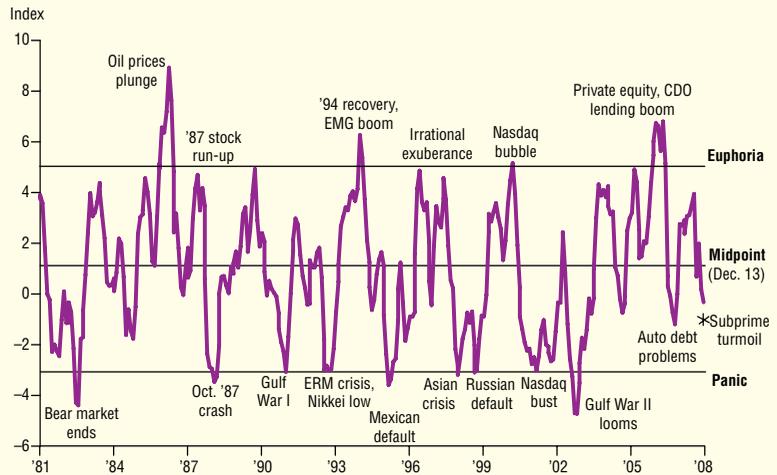
The three main aspects of risk fell dramatically the first half of this decade, partly because of a more stable macroeconomic environment and increased investor confidence. These risks were also affected by the adoption of the new financial instruments and practices, which at a microeconomic level reduced perceived credit and price risk. The combination of improved macroeconomic performance and microeconomic financial innovation meant low defaults and low asset-price volatility, whetting the appetite for a new generation of securities that funneled more money to riskier firms and households.

Indeed, several gauges imply that investors' risk tolerance was high in mid-decade. The Credit Suisse Global Risk Appetite Index, which tracks 64 stock and bond markets, measures the extent to which asset prices have risen because risk premiums have fallen, ostensibly because of investors' declining concern about risk.<sup>2</sup> The index began gyrating upward in early 2003, with a brief interruption in spring 2006, when automakers' debt ratings were downgraded (*Chart 2*). A new downturn began in August 2007.

The high tolerance for risk in the middle of the current decade partly reflects greater stability in asset prices. Such indicators as the spread between yields on emerging-market debt and comparable-maturity Treasury bonds fell to extremely low levels (*Chart 3*).

Chart 2

## Risk Appetite Index Returns to More Normal Levels



NOTES: EMG boom denotes the boom in stock and bond prices in emerging market economies. ERM crisis refers to the breakdown of an attempt by European nations to stabilize their exchange rates under the exchange rate mechanism.

SOURCE: Credit Suisse Global Monthly Risk Appetite Index, with author modifications to some labels in Wilmot, Mielczarski and Sweeney (note 2).

Chart 3

## Emerging-Market Bond Yields Fall to New Low Against Treasuries



SOURCE: JP Morgan Chase.



*Recession risk and inflation are two primary drivers of interest rates. Since both have diminished, it's not surprising that the relationship between short- and long-term rates has been unusual in recent years.*

In January 2007, stock volatility measures were at their lowest since 1993.

### Macroeconomic Stability

All three aspects of risk fall when recession and inflation pose less of a threat, which is what has happened in recent years—by almost any measure.

An entire generation of Americans has scant experience with recessions, thanks to a greatly improved economic environment. Since 1982, the economy has seen two brief and shallow recessions—one in 1991, the other in 2001 (*Chart 4*). In those 25 years, the U.S. economy has been in recession for only 16 months—roughly 5 percent of the time.

The U.K. and Canada have also had fewer downturns. However, not all major countries are seeing the same trend. Japan, France, Germany and Italy have had more frequent economic downturns in the past 15 years.

Investors' comfort level has also been reinforced by their experience with inflation. Among the seven largest developed economies—the U.S., U.K.,

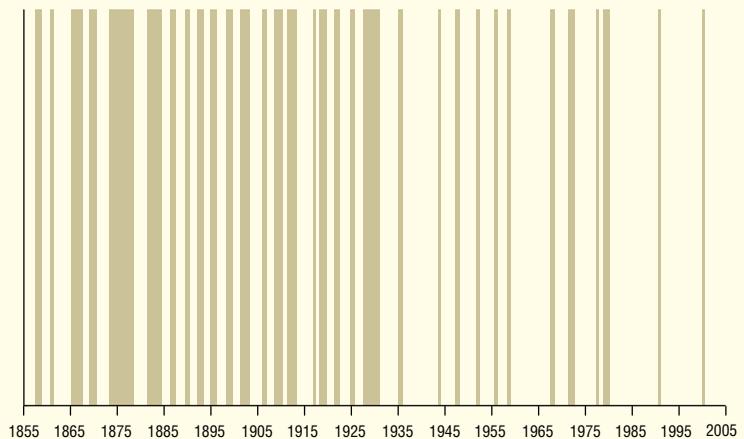
Germany, France, Italy, Canada and Japan—inflation has converged over the past 15 years to low annual rates. At the same time, emerging economies once plagued by high inflation have seen price pressures recede and move toward the low levels of advanced countries.

While the risk of rising prices hasn't disappeared, inflation has become lower and more predictable. Dallas Fed economist Tao Wu finds that the inflation premium on five-year Treasury bonds has fallen to near zero in recent years, down from around 2.5 percentage points in the early 1980s (*Chart 5*).<sup>3</sup> The steep drop implies that inflation risk is a less important factor in interest rate volatility.

Recession risk and inflation are two primary drivers of interest rates. Since both have diminished, it's not surprising that the relationship between short- and long-term rates has been unusual in recent years. From 2001 to mid-2004, rates on such short-term instruments as three-month Treasuries declined and then leveled off. They

Chart 4

### U.S. Economic Downturns Become Fewer and Farther Between



NOTE: Shaded bars indicate recessions.

SOURCE: National Bureau of Economic Research.



then rose steeply through August 2006 (Chart 6). Over the past seven years, however, long-term bond yields barely budged, departing from the textbook pattern of the 1980s and 1990s, when interest rates for bonds with different maturities tended to move together.<sup>4</sup> This change may also reflect the deepening of the Treasury market arising from the increased demand of foreign investors, particularly from large emerging economies, where growth has fueled dramatic increases in savings.<sup>5</sup>

### Slicing and Dicing Risk

Along with greater macroeconomic stability came financial innovations that contributed to the post-1990 decline in the premiums investors require to hold long-term securities. The new products have helped reduce other risk premiums as well.

For example, the market has been expanding for Treasury derivatives, which allow investors to take on or shed the risk of bond price movements. This has enabled investors in long-term government bonds to reduce their exposure to interest rate risk with instruments that shift some of it to more risk-tolerant investors.

Other innovations have helped debt investors reduce their exposure to default risk. Two noteworthy examples are the credit default swap (CDS), primarily used to mitigate default risk on corporate debt, and the collateralized debt obligation, popular for repackaging subprime-mortgage-backed securities and many of the loans financing the current cycle's leveraged-buyout boom (see glossary on back page).

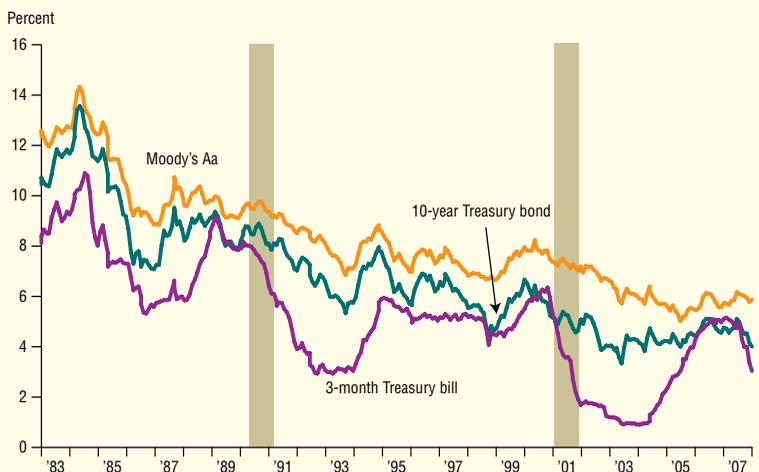
A CDS transfers default risk from bondholders to CDS sellers, which guarantee the creditworthiness of the underlying bonds. If default occurs, the seller either takes delivery of the defaulted bond for the par value or pays the bondholder the difference between the par and recovery values. Because there's no requirement to hold the actual bond, much of the growth in the CDS market is attribut-

Chart 5  
Inflation Risk Premium Disappearing



SOURCE: Updated estimates by Tao Wu revised from "Globalization's Effect on Interest Rates and the Yield Curve," by Tao Wu, Federal Reserve Bank of Dallas *Economic Letter*, September 2006.

Chart 6  
Short- and Long-Term Interest Rates Diverge More in 2000s



NOTE: Shaded bars indicate recessions.

SOURCES: Federal Reserve Board; Moody's Investors Service.

*Investors' demand for higher yields as long-term interest rates continued falling induced lenders to extend capital to the least creditworthy borrowers.*

able to investors speculating on swings in credit spreads. CDS trading volume has risen dramatically, from \$631 billion in 2000 to over \$45 trillion by mid-2007, according to International Swaps and Derivatives.

In recent years, investors have only needed to place one-way bets on credit spread movements. With recession and inflation risk seemingly vanquished, the spread between interest rates on high-yield, or junk, bonds and equivalent-maturity Treasuries trended downward for several years before hitting a record low in June 2007 (see Chart 1).

The decline didn't stem from a drop in high-yield-bond issuance but from technological and macroeconomic factors that enabled less creditworthy firms to increasingly tap the capital markets.<sup>6</sup> In the early 1980s, high-yield issues constituted about one-third of all new corporate bonds sold in the U.S. By mid-2007, they accounted for two-thirds, reflecting their growing importance as a source of business financing.<sup>7</sup>

Also contributing to this move out on the risk spectrum was investors' demand for higher yields as long-term interest rates continued falling. This induced lenders to extend capital

to the least creditworthy borrowers—those rated Ccc or below. After averaging 4 percent a year from 1980 to 2003, Ccc borrowers captured an average annual share of 19 percent of total high-yield issuance between 2004 and the first quarter of 2007. From August through September 2007, Ccc claimed a record 25.4 percent of high-yield bond issuance.

Despite the growing share of low-rated borrowers, spreads hovered near record lows in spring 2007. Once again, financial markets signaled that investors saw little threat of recession. After all, during economic slowdowns junk bonds tend to be the first to default. If anything, the narrow spreads supported the idea that an inverted yield curve—with short-term rates above long-term ones—had lost its capacity to predict downturns and was giving an overly pessimistic reading of the economy's future.<sup>8</sup>

Extremely low corporate default rates encouraged the narrow spreads. According to Moody's, the default rate across all high-yield issuers was 1.27 percent in September 2007, near the post-1990 low of 1.37 percent in April 1997 and well below the 3.4 percent annual average since 1970. Remarkably, no defaults occurred in February and March 2007, the first default-free months since 1997.

Further downward pressure on junk spreads arose from increased demand for high-yield bonds from the growing number of hedge funds. In mid-2007, fund assets under management climbed to \$1.7 trillion, up from \$490 billion in 2000. Accounting for leverage, McKinsey & Co. estimates that hedge funds controlled \$6 trillion in assets in mid-2007, close to the \$8.6 trillion in assets on commercial bank balance sheets at that time.<sup>9</sup> As hedge funds grew, their positions in derivatives, on net, likely assumed some of the risks of stocks and bonds, enhancing these securities' appeal for traditional investors (Chart 7A).<sup>10</sup>

Private-equity funds' role has also grown significantly, with assets under

management topping \$600 billion at the end of 2006—two and a half times what they were in 2000. Private-equity firms may be best known in the current business cycle for buying out public shareholders, taking companies private, and replacing public equity with debt or private-equity stakes. In doing so, they often employ greater leverage than banks to increase their bargaining positions and take on more risk in lending to corporate clients.

Flows to nonprime firms and households have also been enhanced by conduits, particularly structured investment vehicles (SIVs). These off-balance-sheet vehicles issue medium-term debt and commercial paper (CP), the highly rated, short-term notes that offer investors a higher yield than certificates of deposit or similar-term Treasuries.

Conduits use the proceeds from issuing debt to purchase longer-term debt, including corporate bonds, accounts receivables, auto loans, mortgages and credit card debt. Conduits earn profits from the spread between yields on the paper issued and the investments. Some conduits are controlled by and earn profits for banks but aren't technically owned by the banks and don't appear on their balance sheets. In mid-2007, there were 30 SIVs with \$400 billion in assets.

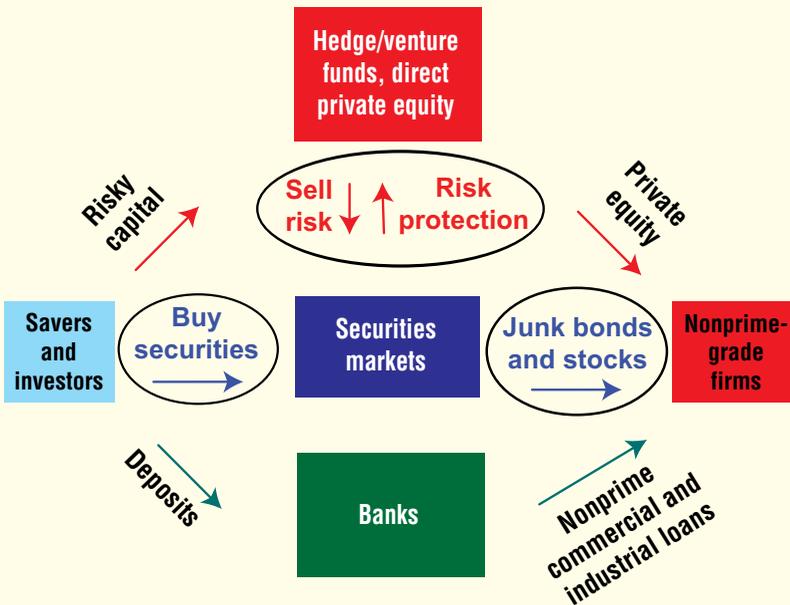
The rapid rise of hedge funds, private-equity financing and other nontraditional investment vehicles often based on derivatives and other structured products created new channels to increase the flow of capital to nonprime firms (Chart 7B).

Financial innovations have also opened up new ways for less creditworthy households to obtain home loans, resulting in a new era in the mortgage markets. Through the 1970s, homebuyers with solid credit usually obtained mortgages from banks, which funded the loans with deposits from savers and investors and held them in portfolio. These loans became known as "prime" because they went to borrowers with good credit, who made

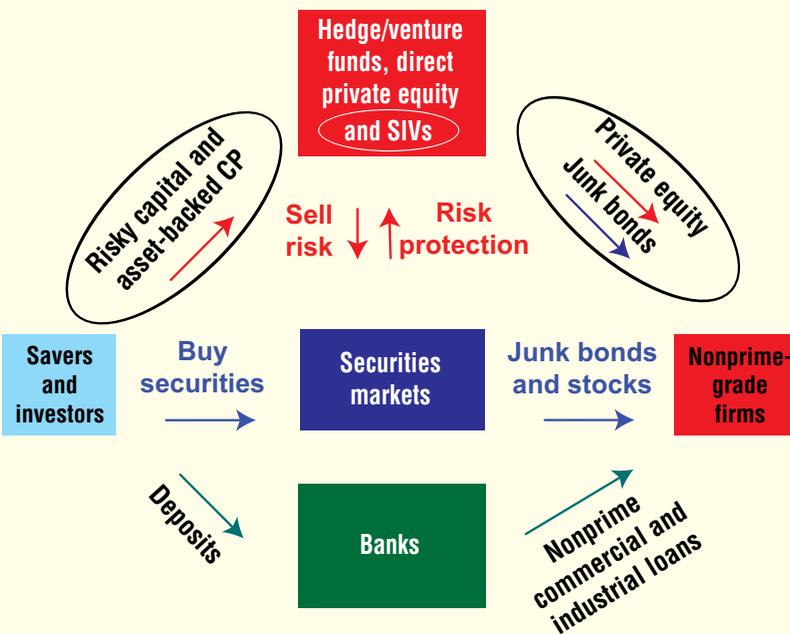
Chart 7

## Hedge Funds Indirectly Bolster Financial Flows to Nonprime Firms

### A. Rise of Hedge Funds, Private Equity Providing Risk Protection Via Derivatives



### B. Rise of Hedge Funds, Private Equity, Derivatives and Asset-Backed Paper



down payments of at least 10 to 20 percent, took on manageable monthly payments and fully documented their income.

By the 1980s, the broadening of the residential mortgage-backed securities (RMBS) market allowed originators to make home loans that weren't funded by deposits. Instead, they sold mortgages to Fannie Mae and Freddie Mac, government-sponsored enterprises that packaged them into RMBS, which were sold with a guarantee against default on the underlying mortgages.<sup>11</sup> Investors generally perceived the guarantees as rock-solid, partly because the two enterprises were viewed as being backed by the U.S. government.

In the first half of the current decade, two types of financial innovations opened mortgage financing to nonprime borrowers—people deemed riskier because of their credit history or uncertain income prospects. First, lenders adopted credit-scoring models from the auto loan market to sort applicants by creditworthiness and charge them appropriate, risk-based interest. This facilitated the screening of nonprime borrowers but left the problem of funding loans that exposed lenders and RMBS investors to higher default risk. The solution came in the form of new structured financial instruments that gave investors the confidence to fund nonprime mortgages.

The approach that gained the greatest acceptance involved consolidating loan payments from pools of nonprime mortgages into collateralized debt obligations (CDOs). To make these securities marketable, their structure divides the income streams from mortgages into tranches, whose credit ratings reflect both the quality of the underlying loans and the assignment of progressive default losses (*Chart 8*). The first income streams are assigned to tranches receiving the highest (Aaa) credit rating, reflecting the lowest probability of default. The largest percentage of mortgage CDO assets falls into this tranche.

*Greater use of structured financial instruments facilitated the rapid growth of nonprime mortgages and leveraged loans.*

The remaining tranches carry successively lower credit ratings, based on increasingly smaller claims on the cash flows of the underlying mortgages. CDOs' bottom tier—the equity tranche—absorbs the first defaults on the mortgages. This tranche isn't rated, carries the greatest risk and produces the highest potential returns. If all goes according to plan, only the lower tranches absorb default losses.

Many investors formed their expectations by relying on the experience of the first half of the current decade, a period characterized by rapid home price increases and low default rates. The assumptions proved entirely too optimistic when the housing and mortgage markets came under stress in the middle of the decade.

The same basic structure of the CDOs was applied to business debt in the form of collateralized loan obligations (CLOs), whose rapid growth has helped fund the recent leveraged-buyout boom. In many respects, the growth of leveraged loans and CLOs parallels the growth of nonprime mortgages and CDOs. Leveraged loan

issuance jumped from \$138 billion in 2001 to \$485 billion in 2006, while nonprime mortgage issuance surged from \$98 billion to \$565 billion. Before the recent credit market turmoil, leveraged loan originations were on track for a \$745 billion annual pace in 2007.

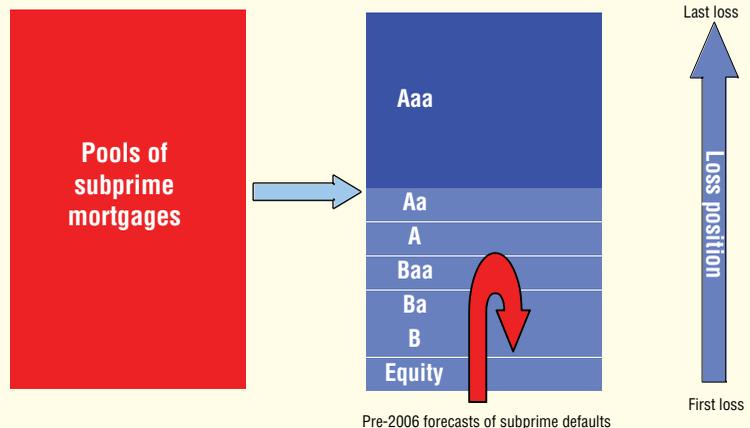
Greater use of structured financial instruments like CDOs and CLOs facilitated the rapid growth of nonprime mortgages and leveraged loans. The ready market for these innovations reflected declines in risk premiums that stemmed not only from optimistic forecasts about default and interest rate risks but also from an increased appetite for risk. Financial markets persisted like this for several years, but it caught up with investors in mid-2007.

### Unwinding Complacency

A high tolerance for risk taking is unlikely to last for long. Investors lose their taste for it, and unforeseen events test unwarranted exuberance, a lesson underscored by the wide swings in the Credit Suisse index (see Chart 2). Periods of excess risk taking often reflect investors' unrealistic assump-

Chart 8

### Low-Rated Tranches Designed to Protect High-Rated CDOs from Default Losses



Pre-2006 forecasts of subprime defaults

SOURCE: Commercial Mortgage Securities Association, modified by authors.



tions about the risks of new financial practices—risks fully appreciated only in hindsight. That has proven to be the case with CDOs.

In early 2007, defaults on non-prime mortgages exceeded expectations, leaving investors in high-rated CDO tranches vulnerable to losses and triggering uncertainty about CDO valuations. The default losses penetrated into the higher-rated tranches, beyond the expectations based on the pre-2006 experience (see Chart 8).

On August 14, three European investment funds were unable to price assets linked to subprime mortgages because of sudden illiquidity in these markets. As a result, the funds froze redemptions, setting off a panic in the broader markets. The demand for liquidity created a spike in interest rates on overnight reserves. The London Interbank Offered Rate (LIBOR), a key short-term rate at which banks lend each other funds, jumped sharply.

Central banks swiftly intervened, injecting reserves into their financial systems to prevent overnight rates from rising above their targets. In the U.S., the Federal Reserve lowered the interest rate at which banks could borrow at the discount window. Because intraday demand for funds was so volatile, an overabundance of reserves sometimes pushed the federal funds rate below its then-target of 5.25 percent.

Although central banks took action to keep markets functioning, commercial banks have so far been reluctant to extend each other credit. This can be seen in the widening spread between the three-month LIBOR and the federal funds rate target. Months after the initial crisis, LIBOR remains elevated, indicating that full confidence has yet to be restored (Chart 9). This has wide-ranging implications because many prime as well as nonprime business loans and adjustable-rate mortgages have interest rates indexed to LIBOR.

Some analysts have predicted

that investors' risk tolerance won't soon return to the high levels of mid-decade. This would be a healthy development for credit markets, which had underpriced risk. Reflecting the shift to more sober attitudes, junk bond spreads jumped from near-record lows in early summer to above-average levels by late November, even though the default rate on the bonds fell to 1.13 percent in October, its lowest in 25 years.

More broadly, the rise in credit spreads reflects curtailed financial flows to nonprime firms and affects the costs of such financing. Even prime firms are finding constricted credit flows in some markets. Commercial paper rates have risen relative to Treasury rates, and asset-backed volumes have dropped sharply (Charts 10 and 11).

Leveraged-loan originations fell to \$6.4 billion in August after averaging \$61 billion a month in the first half of 2007. The stagnation in this market has left many financial institutions with a large volume of loans on their balance sheets. To complete the leveraged-

buyout deals agreed to before financial markets became unsettled last summer, these loans must be priced and sold in the secondary markets. Issuance of CLOs, however, hasn't returned to the levels seen before late summer.

Financial flows to nonprime households were similarly affected by the recent credit crisis. Even before last summer, they had experienced a severe pullback. The recent credit crisis has prompted lenders to further tighten credit standards for subprime and Alternative-A mortgages, which also go to nonprime applicants.

Investors' reduced purchases of RMBS uninsured against default effectively tightened credit standards for jumbo mortgages, which exceed the size Fannie Mae and Freddie Mac can buy. As a result, jumbo financing became harder to obtain, and interest rates rose by about 1 percentage point above their June levels, implying a roughly 20 percent jump in payments on a given size mortgage.

The use of new and untested securities to fund nonprime loans to

Chart 9

### Spread Between 3-Month LIBOR and Federal Funds Rate Target Wide Since Mid-August 2007

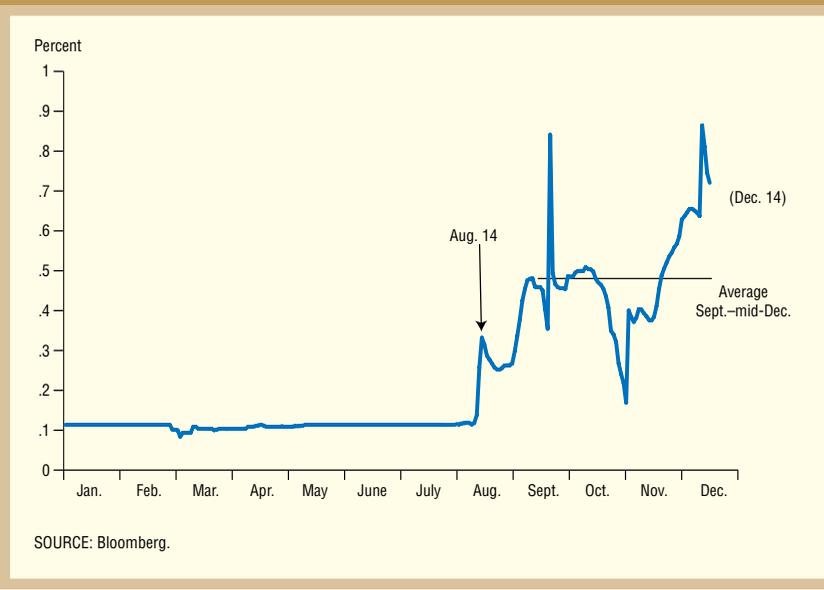
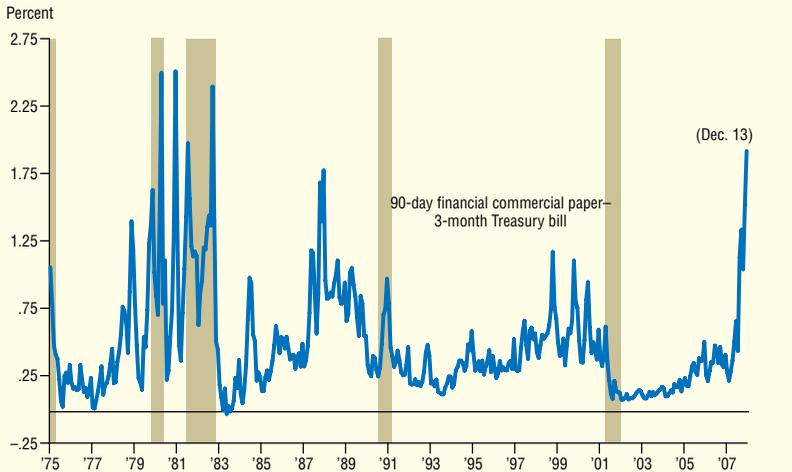




Chart 10

### Spread Between Commercial Paper and Treasury Rates Jumps in Late Summer 2007



NOTES: Spreads are based on the prime (financial and nonfinancial) commercial paper until 1996 and the financial paper rate thereafter. Shaded bars indicate recessions.

SOURCE: Federal Reserve Board.

households has been the Achilles' heel of the recent mortgage boom. Heavy reliance on CDOs based on nonprime mortgages—and the loss of confidence in them—has been a drag on a housing market already burdened with a large oversupply and stagnant or falling prices.

Nonprime firms, which relied on banks for most of their financing 30 years ago, depend today on some of the same structures as nonprime households to fund their operations. While pooling mortgages into securities has facilitated financial flows to nonprime households and firms, it has also encouraged loose lending standards that have buckled under the stress of the recent credit market upheaval.

In one sense, the financial turmoil represents an abrupt return to more sustainable and sober-minded risk taking by investors. As a recent *Financial Times* article noted, "Corporate treasurers are no longer investing in things they don't understand."<sup>12</sup>

Like investors, lenders are taking a more cautious approach. Banks had been tightening standards for real estate loans since late 2006, responding to weakening housing and mortgage market conditions. A July 2007 Federal Reserve survey found banks were imposing stricter standards for several types of non-real estate loans, and an October survey found an acceleration of the trend.

This more general tightening may reflect greater near-term uncertainty, lower risk appetite and concerns that mounting subprime losses may eat enough into bank equity-capital cushions to impair some banks' ability to both lend and meet capital standards. Such concerns grew in November, when credit spreads again increased and U.S. and international stock prices experienced sizable declines.

Chart 11

### Asset-Backed Commercial Paper Outstanding Plunges After August Turmoil



SOURCE: Federal Reserve Board.

#### Valuable Lessons

Overly optimistic risk assessments of new financial innovations contributed to the excessive risk taking that laid



the groundwork for the 2007 credit crisis, when many of these instruments were first put to the test. With widespread subprime mortgage defaults, many structured products—from private mortgage-backed securities to asset-backed commercial paper—failed to perform as expected.

It wasn't just a case of investors not appreciating the complexity of these products. The financial engineers who created and used them were also unprepared for how the products would trade—or fail to trade—in a less liquid environment. The combination of opacity, illiquidity and inability to ascertain prices for structured products resulted in a swift loss of investor confidence.<sup>13</sup>

By early November, the situation seemed to have improved; but then signs of financial distress again picked up, leaving the credit markets vulnerable to lower issuance volumes and limited trading of existing structured products. Should these conditions persist, the reduced availability of credit to nonprime firms and households could hurt overall economic growth.

Valuable lessons have emerged from the financial market turmoil. Principal among them is that there is risk inherent in pricing products off thinly traded securities. At the root of the disruption was three hedge funds' freezing of investor redemptions because of an inability to price securities valued off subprime mortgages. This news exacerbated the troubled trading environment, thereby triggering a seizing up of the riskier segments of the credit markets.

Perhaps the 2007 credit crunch has taught investors they should not overlook the close links among default risk, interest rate risk and risk appetite—and they should not underestimate these aspects of risk when times are good. The slicing and dicing, and thereby transferring and spreading, of risk were more attractive in theory than in practice when these financial innovations were put to the test.

Realistic assessments of these

products' risk will hopefully lead to their more appropriate use in the future. More important, the return of more sustainable risk taking in general should be healthy in the long run.

The abruptness of this transition, however, poses challenges for maintaining sustainable macroeconomic growth and price stability over the short and medium terms.

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## Notes

The authors thank Nicole Cote and Jessica Renier for research assistance and Credit Suisse for permission to chart its Global Risk Appetite Index.

<sup>1</sup> See the classic article, "Stock Prices, Earnings, and Expected Dividends," by John Y. Campbell and Robert J. Shiller, *Journal of Finance*, vol. 43, July 1988, pp. 661–76.

<sup>2</sup> For details on the construction of this index, see "Global Risk Appetite Index," by Jonathan Wilmot, Paul Mielczarski and James Sweeney, Credit Suisse First Boston Market Focus, Feb. 20, 2004.

<sup>3</sup> "Globalization's Effect on Interest Rates and the Yield Curve," by Tao Wu, Federal Reserve Bank of Dallas *Economic Letter*, vol. 1, September 2006.

<sup>4</sup> *The Economics of Money, Banking, and Financial Markets*, by Frederic Mishkin, 8th ed., New York: Addison-Wesley, 2006, p. 135.

<sup>5</sup> Foreign investors now hold roughly 50 percent of U.S. Treasury debt, compared with only 16 percent in the early 1980s. The deeper Treasury markets may have lowered the liquidity risk premium on long-term bonds. However, econometric evidence on links between the timing of foreign Treasuries purchases and long-term yields has been mixed.

<sup>6</sup> Spreads are also used to gauge how risky a given country's credit risk is vis-à-vis that of comparable bonds issued by the U.S. Treasury. As with high-yield bonds, JPMorgan's spread series on emerging market countries is running at or near record low levels (Chart 3). These very low spreads on emerging market debt reflect

the financial markets' confidence that emerging market countries will have little or no trouble repaying their debt during the global economic boom that the International Monetary Fund has forecasted will continue at least through 2012.

<sup>7</sup> See the following reports from Standard & Poor's: "U.S. Ratings Distribution: A 25-Year March to Junk" (Nov. 3, 2006); "U.S. Ratings Distribution: A Speculative Grade World" (Aug. 1, 2007); and "Sector Trends in U.S. Ratings Distribution: Shift in the Ratings Mix over the Past 20 Years" (Sept. 7, 2007).

<sup>8</sup> For more on factors that complicate the interpretation of the yield curve, see "Reflections on the Yield Curve and Monetary Policy," speech by Federal Reserve Chairman Ben S. Bernanke to the Economics Club of New York, March 20, 2006, [www.federalreserve.gov/newsevents/speech/bernanke20060320a.htm](http://www.federalreserve.gov/newsevents/speech/bernanke20060320a.htm).

<sup>9</sup> "The New Power Brokers: How Oil, Asia, Hedge Funds, and Private Equity Are Shaping Global Capital Markets," McKinsey & Co., October 2007, [www.mckinsey.com/mgi/publications/The\\_New\\_Power\\_Brokers/index.asp](http://www.mckinsey.com/mgi/publications/The_New_Power_Brokers/index.asp).

<sup>10</sup> Nevertheless, some have argued that excessive risk taking by some hedge funds might pose systemic risks to markets if counterparty risk becomes a problem during times of financial turmoil.

<sup>11</sup> "The Rise and Fall of Subprime Mortgages," by Danielle DiMartino and John V. Duca, Federal Reserve Bank of Dallas *Economic Letter*, vol. 2, November 2007, chart 2.

<sup>12</sup> Quote from Tony Carfang, a partner with Treasury Strategies, in "U.S. companies lose taste for risk," by Saskia Scholtes and Francesco Guerrera, *Financial Times*, Oct. 25, 2007, p. 15.

<sup>13</sup> See, for example, Federal Reserve Chairman Ben Bernanke's remarks, "Housing, Housing Finance, and Monetary Policy," at the Federal Reserve Bank of Kansas City's Economic Symposium, Jackson Hole, Wyo., Aug. 31, 2007, [www.federalreserve.gov/newsevents/speech/bernanke20070831a.htm](http://www.federalreserve.gov/newsevents/speech/bernanke20070831a.htm).

# Glossary of Terms in Early 21st Century Finance

**Collateralized debt obligations (CDO)**—Structured credit products backed by pools of other assets. CDOs apportion the credit risk of a common pool of assets by assigning cash flows to different “tranches.” The most senior tranche is the first to receive cash flows and has the lowest risk of default and the highest credit rating. Lower tranches have claims to subordinate cash flows, and they’re deemed riskier with an appropriately lower credit rating. The most subordinate tranche is called the equity and suffers the first defaults; in the best of credit environments, it generates the highest return.

**Collateralized loan obligations (CLO)**—A type of CDO, they’re backed by a pool of bank and/or nonbank loans, which are sold as different tranches to investors. CLOs arose in the mid-1990s to enable banks to sell loans and avoid holding regulatory capital. Early CLOs were mainly backed by loans to investment-grade companies. Today, they’re predominantly backed by loans to below-investment-grade corporations, or leveraged loans.

**Conduits and structured investment vehicles (SIV)**—Off-balance-sheet bank vehicles that issue short-term commercial paper and medium-term notes. The funds are invested in higher-yielding, longer-term assets such as mortgage-backed securities and credit card debt. These entities earn a profit for banks but are technically not owned by banks and don’t appear on bank balance sheets. The banks earn a profit from the spread between yields on the paper issued and the investments.

**Credit default swaps (CDS)**—Contracts undertaken by two counterparties who agree to isolate and separately trade the credit risk of a third party. The CDS buyer, who typically owns debt in the corporation, pays a periodic fee to the seller. In the event of default, the seller either takes delivery of the defaulted bond or pays the buyer the difference between the bond’s par value and recovery value.

**Hedge funds**—Private investment funds open only to a limited range of “accredited” investors, a restriction that exempts hedge funds from direct regulation. Hedge funds can invest in many assets depending on their self-imposed guidelines. They can take investment positions that yield profits if an asset price either rises (being “long”) or falls (being “short”) and can invest in complex securities such as futures, options and other structured products. Hedge funds aim to generate high returns that aren’t closely correlated with broader financial returns.

**Leveraged loans**—Business bank loans made to nonprime issuers bearing floating interest rates based off LIBOR, a widely used international floating rate interest rate index. These loans have repayment priority over most other debt. CLOs are the largest purchaser of leveraged loans, followed by hedge funds.

**London Interbank Offered Rate (LIBOR)**—A daily reference rate published by the British Bankers Association. LIBOR reflects the interest rates at which banks offer to lend unsecured funds to other banks. LIBOR is often used as an index for adjustable-rate mortgages.

**Mortgage-Backed Securities (MBS)**—A security whose cash flows are backed by the principal and interest payments from a pool of mortgage loans. Payments are made monthly and last as long as the maturity of the underlying mortgages. Residential mortgage-backed securities (RMBS) are backed by home mortgages, and commercial mortgage-backed securities (CMBS) are backed by commercial and multifamily properties.

**Private-equity funds**—They invest directly in companies and business units with the aim of gaining control and being in a position to make fundamental changes in the target’s capital structure, management and operations. Target companies are taken private, restructured over a typical period of three to seven years and then re-listed through an initial public offering. The most common tack for a restructuring is a leveraged buyout; other forms of private equity include venture capital and bridge financing.

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