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SPEECH

# May You Live in Interesting Times: The Sequel

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Exhibits (slides) PDF

I gave a speech last October entitled "May You Live in Interesting Times." In that speech I listed a number of events that I never, ever expected to see. These included AAA-rated mortgage backed securities selling at 85 to 90 cents on the dollar, asset-backed commercial paper backstopped by real assets and a full bank credit support yielding more than unsecured commercial paper issued by the same bank, and a Treasury bill auction that almost failed at a time that there was a flight to quality into Treasurys going on.

The list has gotten much longer since then. To mention just a few: AAA-rated collateralized debt obligations (CDOs) that may turn out to be worthless; monoline guarantors, some still with AAA ratings, but with credit default swap spreads higher than many non-investment grade companies and a major investment bank's demise in a few short days in March.

The number of liquidity facilities developed and introduced by the Federal Reserve is another list that has gotten much longer. Policymakers have responded to the persistent pressures in funding markets by introducing several new liquidity tools.

Today, I want to focus on what we've been up to in terms of these liquidity-providing innovations. Before I begin in earnest let me underscore that my comments represent my own views and opinions and do not necessarily reflect the views of the Federal Reserve Bank of New York or of the Federal Reserve System.

Let me first define the underlying problem. The diagnosis is important both in influencing the design of the liquidity tools and in assessing how they are likely to influence market conditions.

As I see it, this period of market turmoil has been driven mainly by two developments. First, there has been significant reintermediation of financial flows back through the commercial banking system. The collapse of large parts of the structured finance market means that banks can no longer securitize many types of loans and other assets. Also, banks have found that off-balance-sheet exposures—such as structured investment vehicles (SIVs) or backstop lines of credit that are now being drawn upon—are adding to the demands on their balance sheets.

Second, deleveraging has occurred throughout the financial system, driven by two fundamental shifts in perception. On one side, actual risks—due to changes in the macroeconomic outlook, an increase in price volatility, and a reduction in liquidity—and perceptions about risks—due to the potential consequences of this risk for highly leveraged institutions and structures—have shifted. Many assets are now viewed as having more credit risk, price risk, and/or illiquidity risk than earlier anticipated. Leverage is being reduced in response to this increase in risk.

On the other side, the balance sheet pressures on banks have caused them to pull back in terms of their willingness to finance positions held by non-bank financial intermediaries. Thus, some of the deleveraging is forced, rather than voluntary.

In some instances, these two forces have been self-reinforcing: In March, the storm was at its fiercest. Banks and dealers were raising the haircuts they assess against the collateral they finance. The rise in haircuts, in turn, was causing forced selling, lower prices, and higher volatility. This feedback loop was reinforcing the momentum toward still higher haircuts. This dynamic culminated in the Bear Stearns illiquidity crisis.

During the past eight months, the financial sector as a whole has been trying to shed risk and to hold more liquid collateral. This is a very difficult task for the system to accomplish easily or quickly for two reasons. First, the financial sector, outside of the commercial banking system, is several times bigger than the banking system. So, with some hyperbole, you are, in essence, trying to pour an ocean through a thimble. Second, this process of deleveraging tends to push down asset prices for less liquid assets. The decline in asset prices generates losses for financial institutions. Capital is depleted, increasing the pressure on balance sheets.

One consequence of this reintermediation and deleveraging process has been persistent upward pressure on term funding rates. For example, the spreads between 1- and 3-month LIBOR and the comparable overnight index swap rates have widened sharply during this period. The overnight index swap rate is the expected effective federal funds rate over the stated maturity of the swap. As shown in the two exhibits on page two, this pressure on term funding rates has occurred in the United States, Euroland, and the

United Kingdom. It is a global phenomenon.

In fact, the increase in LIBOR to overnight indexed swap (OIS) spreads may understate the degree of upward pressure on term funding rates. Note that after a *Wall Street Journal* article on April 16 questioned the veracity of some of the LIBOR respondents and the British Bankers Association threatened to expel any banks that they discovered had been less than fully honest—LIBOR spreads increased further.

The foreign exchange swap market indicates that the funding costs for many institutions may be even higher than suggested by the dollar LIBOR fixing. As shown in the next slide, the funding cost of borrowing dollars by swapping into dollars out of euros over a 3-month term is about 30 basis points higher than the 3-month LIBOR fixing.

So what explains this rise in funding pressures more precisely? Some have argued that the rise in term funding spreads reflects increased counterparty risk; others that the rise stems from a reduction in appetite of money market funds to provide term funding to banks. Over the past eight months, there is some validity to both of these arguments. But neither explanation provides a very satisfactory explanation.

Credit default swaps spreads for major commercial banks have narrowed considerably over the past two months. This indicates that counterparty risk assessments are improving—yet LIBOR-OIS spreads widened over this period. Thus, it is hard to pin this widening in LIBOR-OIS spreads on an increase in counterparty risk.

Similarly, the notion that money market mutual funds have lost their appetite for term bank debt has not been particularly compelling recently. The split of money market fund assets between Treasury-only versus prime money market funds has been relatively stable, the weighted average maturity of the funds has been increasing, and prime funds have increased their allocation to both foreign and domestic bank obligations. In contrast, when there was a flight to quality to Treasury-only money market funds last August, this was a more compelling explanation.

So what has been driving the recent widening in term funding spreads? In my view, the rise in funding pressures is mainly the consequence of increased balance sheet pressure on banks. This balance sheet pressure is an important consequence of the reintermediation process. Although banks have raised a lot of capital, this capital raising has only recently caught up with the offsetting mark-to-market losses and the increase in loan loss provisions. At the same time, the capital ratios that senior bank managements are targeting may have risen as the macroeconomic outlook has deteriorated and funding pressures have increased.

The argument that balance sheet pressure is the main driver behind the recent rise in term funding spreads is supported by what has been happening to the relationship between other asset prices—especially the comparison of yields for those assets that have to be held on the balance sheet versus those that can be easily sold or securitized. Consider, for example, the spread between jumbo fixed-rate mortgages and conforming fixed-rate mortgages, which is shown in the next slide. As can be seen, this spread has widened sharply in recent months, tracking the rise in the LIBOR/OIS spreads.

Why is this noteworthy? Jumbo mortgages can no longer be securitized, the market is closed. Thus, if banks originate such mortgages, they have to be willing to hold them on their balance sheets. In contrast, conforming mortgages can be sold to Fannie Mae or Freddie Mac. Because the credit risk of jumbo mortgages is likely to be comparable to the credit risk of conforming mortgages, the increase in the spread between these two assets is likely to mainly reflect an increase in the shadow price of bank balance sheet capacity.

If this is true, then the same balance sheet capacity issue is likely to be an important factor behind the widening in term funding spreads. After all, a bank has a choice. It can use its scarce balance sheet capacity to fund a jumbo mortgage or to make a 3-month term loan to another bank.

If balance sheet capacity is the main driver of the widening in spreads, this suggests that there are limits to what the Federal Reserve can accomplish in terms of narrowing such funding spreads. After all, the Fed's actions cannot create bank capital or ease balance sheet constraints materially.

That said, the Fed can reduce bank funding risks by providing a safe harbor for financing less liquid collateral on bank and primary dealer balance sheets. Reducing this risk may prove helpful by lessening the risk that an inability to obtain funding would force the involuntary liquidation of assets. The ability to obtain funding from the Fed reduces the risk of a return to the dangerous dynamic of higher haircuts, lower prices, forced liquidations, and still higher haircuts that was evident in March.

In essence, the Federal Reserve's willingness to provide liquidity against less liquid collateral allows the reintermediation and deleveraging process to proceed in an orderly way, which reduces the damage to weaker counterparties and funding structures. One can think of the Federal Reserve's actions as smoothing and extending the adjustment process—not preventing it—so that the adjustment causes less damage to the financial system and less pernicious macroeconomic consequences.

The Federal Reserve has introduced three new liquidity facilities during the past five months. For depository institutions, the Term Auction Facility (TAF) was introduced in December. This is a complement to the Primary Credit Facility (PCF), often referred to as the Discount Window. In the TAF, 28-day term loans are auctioned by the Federal Reserve every two weeks in single-price

auctions. Any sound depository institution with suitable collateral can participate. A summary of the terms of the two facilities available to depository institutions—the TAF and the Primary Credit Facility—are shown in the next slide.

For primary dealers, we have introduced two new facilities—the Term Securities Lending Facility and the Primary Dealer Credit Facility. The terms for these two facilities are shown in the next slide. These can be thought of as analogues to the TAF and the PCF for depository institutions.

The Term Securities Lending Facility auctions the right to dealers to exchange AAA-rated residential mortgage-backed securities (RMBS), commercial mortgage-backed securities (CMBS) or asset-backed securities (ABS) collateral in exchange for Treasury securities. The dealers take the Treasury securities obtained in the auction and use them as collateral to obtain cash in the Treasury repo market. The bid price is in basis points. The spread between the one-month Treasury repo rate and the one-month term repo rate on the AAA-rated collateral is the metric that drives the price dealers are willing to bid to swap AAA-rated collateral for Treasuries.

The Primary Dealer Credit Facility is a standby borrowing facility for primary dealers, akin to the Primary Credit Facility. But there are a number of important differences. First, the PDCF, like the TSLF, is built to utilize the infrastructure of the triparty repo system managed by the two clearing banks—Bank of New York Mellon and JP Morgan Chase. In contrast, the PCF is administered by the 12 Federal Reserve Banks through the discount window function. Second, the scope of eligible collateral is a bit narrower —confined to most major types of investment grade securities. In contrast, the discount window accepts a broader set of collateral, including certain types of whole loans. Third, the PDCF is a temporary facility that must, by law, disappear once market conditions normalize.

In addition to the TAF, TSLF, and PDCF, the Federal Reserve has undertaken two other liquidity initiatives. First, the Federal Reserve has entered into foreign exchange swaps with the European Central Bank (ECB) and Swiss National Bank (SNB). These central banks disseminate the dollars obtained through these swaps in conjunction with our biweekly TAF auctions. Second, the Federal Reserve has conducted a series of 28-day term single-tranche open market repo operations. Theoretically, these term repos can provide funding against any open market operation eligible collateral—that is, Treasuries, Agencies, or Agency mortgage-backed securities. In practice, the single tranche operations are used predominately to finance Agency MBS debt because it is typically more expensive to finance than Treasury or Agency debt in the marketplace.

So how are these facilities supposed to work? What's the theory? The notion is that the auction facilities should be the main means by which the Fed provides liquidity support to depository institutions and primary dealers. The PCF and PDCF are standby facilities designed to provide reassurance to market participants that sound depository institutions and primary dealers have access to backstop sources of liquidity. But the actual amount of funds advanced through these facilities is likely to be limited in most circumstances.

The Primary Dealer Credit Facility essentially puts the Federal Reserve in the position of tri-party repo investor of last resort. This helps to reassure the two triparty repo clearing banks and the triparty repo investors that the primary dealers will be able to obtain funding. This bolsters confidence in the triparty repo system and reduces the risk of the type of funding run that led to Bear Stearns' illiquidity crisis.

The auction facilities have several advantages relative to the backstop facilities. First, they are dynamic—the results shift from auction to auction. The information obtained through the auction process facilitates price discovery and helps policymakers assess market conditions and sentiment. Second, the auctions appear to have less stigma than the backstop facilities. Stigma is the word used to describe the unwillingness to use a liquidity facility because of fears that such use could send an adverse signal about the health and viability of the borrower.

For the auction facilities, stigma is very low for several reasons. First, many participants participate in the auctions. This provides cover against the potential for an adverse signal from participation. Second, the auctions are conducted for settlement on a forward basis. For example, in the TAF auction, the bidding takes place on Monday and settlement on Thursday. This time lag makes it clear that participants are not bidding because they need immediate funds and are having serious liquidity problems.

So how have the facilities performed in practice? As designed, most of the dollars have been disbursed via the auction facilities, the FX swaps, and the single-tranche OMOs, rather than via the backstop facilities.

The results for the TAF auctions are shown in the next slide. As can be seen, the spread between the stop-out rate and the minimum bid rate has risen and fallen as term funding pressures have fluctuated over the past five months. Interestingly, the recent expansion of the size of the TAF program to $150 billion from $100 billion and expansion of the FX swaps program with the ECB and SNB has led to a sharp fall in the stop-out rate.

In comparing the results of the TAF auctions to the results of the ECB and SNB auctions, the bid-to-cover ratio in the TAF auction is currently somewhat lower than the bid-to-cover rations in the corresponding ECB and SNB auctions.

So have the TAF and TSLF auctions been helpful in improving market function? Although it is impossible to know what the counterfactual would have been without the auctions, most evidence suggests that the TAF and TSLF auctions have improved

market function.

Although a recent study by John Taylor and John Williams found no statistical evidence that the TAF auctions have had an effect on term funding, its choices in terms of econometric design made it very difficult for this study to have found an impact. For example, the paper tests whether there was an impact on the spread only on the day of the auction, not before—with the announcement—or after, when the auction results are announced or when the auctions settle. Interestingly, minor changes in the specification used by Taylor-Williams produce statistically significant results with the expected sign, i.e., the TAF auctions reduced the spread.

They say that a picture is worth a thousand words. The next slide documents the Federal Reserve's major initiatives over the past eight months relative to the LIBOR-OIS spread. Note that virtually all of the Federal Reserve initiatives aimed at improving market function have been associated with a decline in the LIBOR-OIS spread. Perhaps this just represents an announcement or placebo effect. More study is obviously needed. However, it is interesting that those market participants who are the patients have been clamoring for more medicine in the form of both an increase in the size of the TAF auctions and auctions with longer maturities.

Demand for Treasury collateral in the TSLF auctions has been less robust than demand in the TAF, as shown in the next slide. This may reflect several factors. Compared to other programs, the eligible collateral is narrower and the TSLF was scaled up to a large size—$175 billion was auctioned in the first four weeks of the program—much more quickly than the other programs. Alternatively, the less robust demand may be due to primary dealers' ongoing deleveraging. Their needs for funding may be diminishing making it easier to meet their demands in the repo market.

In addition to providing liquidity to the primary dealers, the TSLF auctions have helped to generate a significant improvement in Treasury market function. As shown in the next slide, prior to the first TSLF auction, overnight Treasury repo rates were unusually low and the Treasury market was distorted by a growing number of security fails (i.e., dealers unable to deliver promised securities) and a large number of securities trading special (i.e., with a repo rate below the rate on general Treasury collateral).

It will take time for market function to return to normal. The reintermediation and deleveraging process has, in my view, a considerable ways to go. The Federal Reserve is committed to supplying liquidity to banks and primary dealers as needed to ensure an orderly adjustment.

Thank you for your kind attention.

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