

SPEECH

Reducing the Systemic Risk in Shadow Maturity Transformation

March 8, 2011

Sandra C. Krieger, Executive Vice President

Remarks at the Global Association of Risk Professionals 12th Annual Risk Management Convention, New York City

Thank you for inviting me to speak here today. The views expressed are mine and do not necessarily reflect those of the Federal Reserve Bank of New York or the Federal Reserve System. That said, I want to acknowledge my many colleagues at the Bank who provided essential input.¹

My objective today is to talk about the systemic risk that can be created by financial intermediaries that do not have direct and explicit access to official liquidity—the so-called shadow banks—and how these risks might be reduced. My focus is on maturity transformation activities—that is, the use of short-term funding to finance longer term, risky assets. These activities exploded during the credit bubble. And they popped along with the bubble, killing or nearly killing the sponsoring institutions with the toxic (and nontoxic) assets therein.

We were reminded during the financial crisis of how banks are special—they have access to direct and explicit official credit and liquidity backstops. That is, banks have access to Federal Reserve credit and insured depositors don't need to be short-distance runners. It is a different story for financial intermediaries without this type of backstop. Their liquidity support is less assured and their funding can be quick to flee.

Large banks were the bankers to the shadow banks and activities that lacked official support during the first stages of the financial crisis. But, as we saw, this was insufficient to prevent damaging run dynamics from emerging. The banks did not have the capital to bring all of their off-balance-sheet liabilities onto their balance sheets nor was there always enough "there there" in the shadow banks to permit bank lending to satisfy their obligations. The selling that ensued to try to square the circle in individual cases just made the aggregate imbalances worse.

In response to the dramatic erosion in market liquidity conditions, central banks and governments stepped in and lent freely, to traditional banks against traditional and nontraditional assets and—when that lending proved insufficient to stabilize the situation, they also lent also to nontraditional banks—to the shadow banks. Thus, the defining characteristic of the shadow institutions and their obligations—the absence of direct and explicit access to official credit and liquidity—was violated.

The undertaking of central bank lending to nonbanks that were not subject to the regulation and oversight of traditional banks occurred out of necessity to stabilize a situation that threatened to lead to a much broader and more sustained collapse than was already underway. But these actions were certainly not without their costs; they risked establishing the wrong incentives—incentives to take on too much risk; incentives not to know the collateral that underlies short-term deposits; incentives to continue to ignore the maturity transformation that is taking place.

So, now we are back to where I opened: this talk is about the reforms that have occurred or need to occur to reduce the degree of systemic risk associated with shadow maturity transformation. Much regulatory reform is focused on making the link between banks and these activities more explicit and more properly supported by liquidity and capital. Other reforms are focused on reducing reliance on traditional banks, by having the shadow banking entities themselves provide for the necessary credit and liquidity backstops or by forcing shadow bank investors to bear the ex ante economic cost of their activities.

This topic is one of many systemic risk issues of importance to the Federal Reserve. I lead the Credit and Payments Risk Group at the Federal Reserve Bank of New York—a group that we built out during the financial crisis to manage the risks associated with the Bank's sharply changed balance sheet. The balance sheet that, as I just noted, took on the kind of assets to which I have been referring—assets that embed the maturity transformation activities of shadow banking entities, for financial stability reasons. Staff in the Credit and Payments Risk Group work with others in the Bank—in Bank Supervision, Research, Markets, Legal and the Executive Office—and with colleagues at other Federal Reserve Banks, the Board of Governors, and other regulators and central banks—to influence and implement policies to reduce systemic risk and strengthen financial stability.

What Is Shadow Maturity Transformation?

In order to talk about maturity transformation, and the ways in which shadow banks differ from traditional banks, I need to place it in the context of credit intermediation.

Credit intermediation and shadow maturity transformation

Credit intermediation involves credit, maturity, and liquidity transformation. Credit intermediation is frequently enhanced

through the use of conditional obligations for a third party to provide funding or assume loss, generally in the form of liquidity or credit put options.

For banks, credit intermediation is enhanced by credit and liquidity "put" options provided through deposit insurance and access to central bank liquidity, respectively. These types of "official" enhancement are direct and explicit.

Official enhancements to credit intermediation activities have four levels of "strength" and can be classified as either direct or indirect, and either explicit or implicit. A liability with direct official enhancement must reside on a financial institution's balance sheet, while any off-balance-sheet liabilities of financial institutions are indirectly enhanced by the public sector. For example, an insured deposit is directly enhanced by official credit and liquidity puts, while a bank's off-balance-sheet asset-backed commercial paper conduit (or "ABCP conduit") is indirectly enhanced by a backup line of credit. Insurance is explicit, while the securities lending activities of a commercial bank have implicit liquidity puts. An unfunded commitment is something else still—unenhanced.

Investors appear to consistently have confidence that liabilities with direct and explicit official enhancements will be backstopped. However, as we saw during the financial crisis and in contrast to investor expectations before the financial crisis, there is less certainty how liabilities that are enhanced with anything else will be backstopped in stress scenarios.

Shadow maturity transformation includes maturity transformation which is (1) implicitly enhanced, (2) indirectly enhanced or (3) unenhanced by official guarantees—everything that is not directly and explicitly enhanced by the official sector.

The role of banks in shadow maturity transformation and the stability of the parallel banking system

Today's more opaque and complex system of banks and shadow banks can nonetheless be distilled down to a basic element of financial intermediation: the transformation of long-term risky assets into very short-term liabilities.

It is this maturity transformation that renders financial intermediaries intrinsically fragile since, by definition, an intermediary engaging in maturity transformation cannot honor a sudden request for full withdrawals.

Since financial intermediation is intrinsically fragile, what makes modern, bank-based intermediation relatively stable? The answer is the combination of the existence of explicit, official support by central authorities: that is, the conditional provision of (credible) secured funding (for example, central bank discount window access) and the conditional obligation of the official sector to assume loss, that is, the protection of intermediaries' liabilities in the event of their default (for example, deposit insurance).

By extension, today's *nonbank* based system of financial intermediation also exists and thrives because entities performing maturity transformation receive some form of both liquidity and credit support. (One may push this and say that the provision of this support is a necessary condition for the existence of shadow maturity transformation).

While various types of entities have provided this support to nonbanks, it is the banks themselves that are the central players in performing this function. The reason that banks are the central providers of support services, and therefore are the main backers of shadow banking, is that their sponsoring services are credible. And this credibility in turn emanates from the support they receive from the official sector.

These patterns suggest two basic paths to reduce the fragility of shadow banking activities. The first is to strengthen the ability of, and increase the cost to, sponsoring banks to backstop them; the kind of liquidity and capital enhancements that are embedded in Basel III. The other is to insist on the ability of the shadow institutions to provide for a robust and credible backstop that resides outside of traditional banks.

Major types of shadow maturity transformation

The degree of maturity transformation undertaken in the shadow of our financial system was dramatically exposed in each of the darkest moments of the recent financial crisis. I am going to discuss shadow maturity transformation and reforms in three market segments: ABCP, tri-party repo and money market mutual funds. The collapse of the ABCP market drove pressure on the U.S. dollar LIBOR interest rate in August 2007. The withdrawal of tri-party repo funding from Bear Stearns in March 2008 was a large contributor to that firm's collapse and triggered significant knock-on effects in the market for the underlying collateral and in markets more broadly. Pressure on money market mutual funds in September 2008 exacerbated the problems created by the failure of Lehman Brothers, which itself was driven in part by issues that firm faced in tri-party repo funding.

The Federal Reserve created seven emergency liquidity facilities to deal with the unwind of shadow credit transformation: the term auction credit facility, foreign exchange swaps with foreign central banks (not new but used in an expanded manner), a primary dealer credit facility (PDCF), a term securities lending facility (TSLF), an asset backed commercial paper money market mutual fund liquidity facility (AMLF), a commercial paper funding facility (CPFF) and a money market investor funding facility (MMIFF). While successful in achieving their unique goals, these facilities were merely a bridge to more normal markets, buying time for well-needed structural reform.

I will provide a little background on these markets, including how they looked during the credit bubble and then during the financial crisis. In every case, we should focus on the source and credibility of the credit and liquidity backstops.

Asset-backed commercial paper

ABCP has provided funding flexibility to borrowers and investment flexibility to investors going back to the 1980s when ABCP was used as a way for commercial banks to fund customer trade receivables in a capital efficient manner and at competitive rates. ABCP became a common source of warehousing for ABS collateral. The permissible off-balance structure facilitated balance-sheet size management, with the associated benefits of reduced regulatory capital requirements and leverage. It was also and is currently a good source of fee-based revenue.

For corporate users, ABCP benefits included some funding anonymity; increased commercial paper (CP) funding sources; and reduced costs relative to strict bank funding. ABCP conduits expanded from financing of short-term receivables collateral to a broad range of loans, including auto loans, credit cards, student loans and commercial mortgage loans. At the same time, as the market developed, it came to embed much more maturity mismatch through funding longer-term assets, warehoused mortgage collateral, etc. Securities arbitrage vehicles used ABCP to fund various types of securities, like collateralized debt obligations (CDOs), asset-backed securities (ABS) and corporate debt.

ABCP is traditionally enhanced with an "explicit liquidity put to a commercial bank" where the amounts of the liquidity proceeds are sufficient to pay off maturing ABCP. Exceptions in the past were structured investment vehicles (SIVs) and "SIV lites" that had limited or no liquidity commitments from a commercial bank and instead relied on a sale of the securitized assets to pay off maturing commercial paper.

The run on ABCP began in the summer of 2007 when a foreign bank was unable to value the collateral underlying the off-balance-sheet conduit. Short-term funding costs spiked. Meanwhile, the markets for the underlying instruments plummeted.

The Federal Reserve responded to resulting pressures in short-term funding markets expanding its traditional repo operations, for which U.S. Treasury, and U.S. government-sponsored entities (GSE) debt and mortgage-backed securities (MBS) are acceptable collateral. Soon after, the Federal Reserve made it clear that bank borrowing from the discount window would be viewed as acceptable.

Throughout the fall of 2007, the Federal Reserve loosened monetary policy as well.

When short-term funding costs spiked anew in the fourth quarter of 2007, the Federal Reserve stepped up again, introducing a term auctioned credit facility. Also in December 2007, the Federal Open Market Committee (FOMC) authorized swap lines with other central banks, facilitating the provision of short-term U.S. dollar funding to foreign banking organizations. As the crisis intensified, so did the sizes of these facilities. At their respective peaks, there was almost \$500 billion of term auctioned credit outstanding and nearly \$600 billion of foreign exchange swaps.

In the fall of 2008, the Fed introduced an explicit backstop for ABCP through the AMLF. This peaked just over \$150 billion. The Federal Reserve also introduced the CPFF, which was authorized to purchase three-month unsecured and ABCP directly from eligible A-1/P-1 CP issuers. Like the AMLF, the CPFF provided greater assurance to both issuers and investors that firms would be able to meet redemptions—in this case, to roll over their maturing commercial paper. It also increased the availability of term commercial paper funding to issuers. The maximum outstanding of asset backed-CPFF loans was \$125 billion; for unsecured CP it was roughly \$225 billion.

During the financial crisis, ABCP outstanding fell considerably from its peak. But, of course, the underlying longer-term assets did not disappear—they were sold into distressed markets or came onto the balance sheets of the sponsoring banks.

Tri-party repo market

The U.S. tri-party repo market is an approximately \$2.0 trillion wholesale funding market that brings together short-term investors, like money market mutual funds, and large securities dealers. Clearing banks extend credit to the dealers against these securities each morning so they can pay back overnight cash investors and take possession of their securities portfolio for the trading day. This gives dealers access to their portfolios for the entire day.

The tri-party repo market was initially small and limited to highly liquid collateral such as U.S. Treasury and agency securities. Tri-party repos proved so popular with cash investors that they demanded more tri-party repo investment opportunities and became willing to accept even illiquid collateral like whole loans and non-investment grade securities—because receiving their cash back each morning provided them with the perception of liquidity. Ultimately, the tri-party repo market peaked in March 2008 at \$2.8 trillion. The largest individual borrowers routinely financed more than \$100 billion in securities through these transactions. At the peak of market activity, the largest dealer positions exceeded \$400 billion. Securities dealers became dependent on this form of funding to fund their securities positions.

In March 2008, when Bear Stearns Co. had funding difficulties, its clearing bank became reluctant to continue to provide intraday credit needed to prevent a default. At this point it became clear that neither clearing banks, nor overnight cash investors, were well

prepared to manage a dealer default. Each found it in their best interest to pull away from the troubled borrower before the other to avoid destabilization of their own firms. Furthermore, the liquidation of such large amounts of collateral under the extreme market pressures would have created fire sale conditions, large liquidity dislocations and undermined confidence in the whole market.

To avoid these adverse systemic consequences, the Federal Reserve stepped in and created a special lender of last resort-like facility to lend to dealers against their tri-party repo collateral. The facility effectively backstopped the market in the immediate circumstances surrounding Bear Stearns's failure. When financial conditions worsened considerably further in September 2008, the facility was needed to forestall multiple failures and associated systemic consequences thereof and, as I mentioned, the fire sale of the underlying collateral and the broader impact that would have had. The Fed expanded the terms of the program so it could backstop virtually any type of tri-party repo collateral. Daily use of PDCF peaked at roughly \$150 billion.

The Fed also supported disruptions in funding markets with a term securities lending program, introduced also in March 2008. This facility supported the tri-party repo market by permitting dealers to swap the less liquid securities collateral being shunned by investors for Treasuries, which they could use to obtain secured funding. The amount outstanding in this program at its peak was about \$200 billion.

Money market mutual funds

Money funds exist in the parallel banking system and the value proposition for investors derives from the elements that we have been discussing: investors earn returns that benefit from a maturity mismatch between the investor funding and the investments from which the return is generated—and investors can withdraw on demand and with almost immediate execution. Money funds have little ability to absorb losses and, as with other parallel banking activities, have no official liquidity or credit support, although the Federal Reserve and Treasury stepped in during the financial crisis, using emergency powers.

While prime money market mutual funds (MMMFs) offer immediate redemptions of shares at a rounded price, which in practice essentially never deviates from one dollar, their assets have a longer term and may be costly to liquidate. In times of extreme stress in the financial sector, the risk profiles of prime money fund assets change rapidly, inconsistent with investors' liquidity and safety requirements—full daily liquidity and a stable net asset value (NAV). As a result, the prime fund industry is vulnerable to a confidence shock that could result a rapid flight of investors. In turn, that could have broader systemic consequences through large-scale asset sales to meet large volumes of redemptions.

This fragility of MMMFs can quickly spread to other financial firms and the broader economy given the size of the money fund industry and its prominence in short-term financing markets. In particular, MMMFs are major investors in liabilities of financial firms, both domestic and foreign.

The fragility of money funds, and potential broader consequences was front and center in September 2008 when Lehman failed; all of what I just said occurred: the confidence shock, and then rapid changes in money fund risk profiles and investor risk appetite moving in opposite directions. In this environment, the Prime Reserve Fund, a well-established money market fund that had exposure to Lehman CP, "broke the buck." Money market fund investors at other funds voted with their feet regarding their discomfort with the lack of guaranteed credit and liquidity support for these activities, withdrawing large amounts from funds that invested in instruments that did not have full and direct government support or clearly sufficient parent support. Fund managers reacted by selling assets and investing at only the shortest of maturities, thereby exacerbating the funding difficulties for other instruments such as commercial paper.

The Federal Reserve and the U.S. Treasury stepped in, creating a number of emergency programs to backstop money funds. The Fed's programs that supported money funds were the AMLF and CPFF, which also supported the short-term funding markets more broadly. There was also a special Money Market Investor Funding Facility (MMIFF), to provide liquidity to U.S. money market mutual funds and certain other money market investors although this backstop funding source was never used.

While the Federal Reserve created the liquidity puts, the U.S. Treasury provided the credit puts for money funds. It created the Money Market Fund Guarantee-Temporary Guarantee Program, which insured shareholder assets in participating money market funds.

Systemic Risk Created by Shadow Maturity Transformation

The investors in the market segments discussed above shared in common a lack of understanding about the creditworthiness of underlying collateral. The search for yield by investors without proper regard or pricing for the risk inherent in the underlying collateral is a common theme in shadow banking. The long intermediation chains inherent in shadow banking lend themselves to this—they obscure information to investors about the underlying creditworthiness of collateral. Like a game of telephone where information is destroyed in every step, the transformation of loans into securities, securities into repo contracts, and repo contracts into private money makes it quite difficult for investors to understand the ultimate risk of their exposure. As a clear example, the operating cash for a Florida local government investment pool was invested in CP sold by structured investment vehicles, which in turn held securities backed by subprime mortgages. The CP defaulted and the operating cash of local governments was frozen following a run by investors in November 2008. Moreover, it is important to understand that access to

official liquidity (without compensating controls) would only worsen this problem by making investors even less risk-sensitive, in the same way that deposit insurance without capital regulation creates well-known incentives for excessive risk-taking and leverage in banking. The challenge for regulators is to create rules that require that the provision of liquidity to shadow markets is adequately risk-sensitive.

The sale of distressed assets becomes the problem at hand when investors exercise their rights to withdraw. The sales in stressed conditions reduces the value of the market as a pricing mechanism and capital is destroyed—not only of the affected institution, but also in all other institutions that hold these affected assets on a mark-to-market basis. Moreover, runs spread from unhealthy to healthy institutions, forcing liquidations that unnecessarily destroy value.

Finally, it is important to understand that shadow maturity transformation is often facilitated through the underpricing of liquidity puts sold explicitly or implicitly by traditional banks. This is changing due to introductions of the liquidity coverage ratio for example, and a heightened focus on liquidity from a supervisory perspective, that will be discussed below.

The Future of Shadow Maturity Transformation

So, we emerge from the financial crisis with a few "to do" list items to reduce systemic risk associated with shadow banking. First, we must ensure that short-term liquidity is provided in a risk-sensitive fashion. Second, we must ensure that maturity transformation and the puts, largely provided by the traditional banking system, are understood and priced properly—so that shadow investors bear the full ex ante economic costs; banks must be required to hold adequate capital and liquidity against these puts and ultimately pass the costs along the intermediary chain. And third, we must consider private resolution mechanisms for runs on shadow institutions.

Structural Reforms

Let's turn to select structural reforms to date and see where they address these points.

Asset-backed commercial paper

Liquidity and capital requirements for bank backup lines of credit for conduits have increased, because of FAS 166/167 and Basel capital rules. Banks must consolidate the loans or securities of the conduit onto their balance sheets if it sponsors and provides backup liquidity. This will subject the bank to increased risk-based and leverage ratio capital requirements as well to higher loan loss reserves. New proposed liquidity requirements for banks also could make backup lines more expensive by requiring an adequate level of liquid assets to meet its stress liquidity needs for a 30-day time horizon.

The impact of the greater capital and liquidity requirements for bank-sponsored conduits likely will include higher-cost lines of credit to finance companies and the end of programs that exist solely for off-balance-sheet capital arbitrage. Mitigating behavior by the industry might include: a shift in conduit sponsorship from U.S. banks to non-banks or foreign banks with balance sheet capacity, or a re-structuring of conduits in order to avoid accounting consolidation (for example, through the sale of first-loss tranche to transfer control to third party).

Most of the focus on the ABCP providers has been on the "internal" shadow banking institutions, such as bank-sponsored finance companies, rather than the "external" shadow banking institutions. As investor appetite returns, there will be incentives to use highly rated, unregulated counterparties. Supervisors will need to be vigilant about supervised banks that rely on these types of companies for credit protection and capital relief. Investors too need to carefully evaluate the credit and liquidity protection provided by unregulated but highly rated entities. Rating agencies will need to evaluate the capital adequacy of rated entities, the ability of these entities to meet the likely calls for liquidity and monitor the ongoing viability of unregulated entities.

Tri-party repo

The capital and liquidity rules of Basel III should make both depository institutions and broker-dealers, stronger repo counterparties. In particular, these firms will have more and higher quality capital, and will face higher costs of maturity transformation. Moreover, rule changes (including both revised trading book capital rules and the Volcker Rule) should improve the quality of collateral used by borrowers, as structured credit exposures are shed.

Outside of the regulation of borrowers, a private-sector task force was assembled by the New York Fed to address infrastructure design issues that obscured credit and liquidity risks in this market. The Tri-Party Repo Market Infrastructure Reform task force recommended and is implementing changes that will materially reduce reliance on clearing bank credit by adopting collateral substitution procedures and a 24-hour term for overnight repo.² These changes will bring the market infrastructure into line with practices in Europe and other parts of the world, and will dampen an important channel for the transmission of systemic risk by making it less likely that a troubled dealer can destabilize its clearing bank and vice versa through its tri-party repo activities. Intraday credit will be limited and supported by a committed credit line.

These changes will also force cash investors to consider the credit and liquidity risks they assume because they can no longer assume that the clearing banks will provide an implicit credit and liquidity backstop. As a result, we expect some tri-party repo cash investors to strengthen their risk management by paying closer attention to their counterparties' ability to repay their loans and by selecting more liquid, higher quality collateral. Some may exit the market altogether if they conclude that the risks inherent

to this activity are not in line with their risk appetite. A smaller, more conservatively collateralized tri-party repo market may well emerge.

The tri-party repo market will also more conservatively price the credit intermediation.

However, reform to date has not directly addressed the ability of investors to deal with the failure of a large dealer. The inability of investors to hold collateral directly remains an important source of systemic concern. As discussed above, the liquidation of large amounts of collateral under extreme pressure would most certainly be disorderly, including creating fire sale market conditions and undermining confidence in the whole market. A desired outcome of the new liquidity buffer requirements and the new settlement procedures would be that dealers are less vulnerable to runs on their tri-party repo financing. Cash investors, to avoid triggering a dealer default, would begin to withdraw funding from a potentially troubled dealer earlier and more gradually, providing a troubled dealer with an opportunity to rely on its liquidity buffer as it sells off assets that it can no longer finance. Further clarification on FDIC rules regarding the resolution of a large, non-bank under Title II of the Dodd-Frank Act will also inform the need to take further action to avoid a disorderly liquidation of a defaulting dealer's tri-party repo collateral. As these regulatory reforms and settlement procedures reshape the tri-party repo market, market participants and policymakers will need to also think about the role and form for private resolution mechanisms.

Money market mutual funds

The goal of MMMF reform is to reduce the fragility of these institutions and their susceptibility to runs, the rapid flight of investors, which can destabilize the broader financial system. To date, the Securities and Exchange Commission (SEC) has approved amendments to the rules applicable to MMMFs that focus on reducing risk on the asset side of funds' balance sheets. For example, the new rules require money market funds to have a minimum percentage of their assets in highly liquid securities; there is both a daily and a weekly requirement. These rule amendments also further restrict the ability of money market funds to purchase lower quality securities.

The President's Working Group (PWG) has proposed a range of reform options for consideration by the Financial Stability Oversight Council. In general, these were intended to address the fact that MMMFs have a number of characteristics—including a stable NAV, redemption upon demand, and extremely risk-averse investors—which interact to make these entities vulnerable to runs.

Several of these proposals entail the creation of liquidity and capital buffers. The former provide additional near-cash assets to deal with redemptions, while the latter enhances the loss absorption capacity available to deal with a credit event. Broadly speaking, two kinds of buffers can be set up: ex ante and ex post.

One type of ex ante buffer is to create a private emergency liquidity facility, capital reserve, or insurance. Regulated fixed NAV funds would benefit from an ex ante buffer but be forced to pay the cost. Another approach to an ex ante buffer is for individual funds to set aside resources in advance to absorb losses should they occur, as capital does in traditional banks. As an alternative, the Investment Company Institute has proposed a private sector "liquidity bank" which would provide a backstop but itself might benefit from access to official liquidity.

An ex post buffer does not require any resources to be set in advance, but is created by taking steps to ensure that investors absorb losses when they occur, and cannot flee leaving the losses behind. In particular, such measures are designed to forestall investors redeeming shares at a NAV of one dollar once credit event or liquidity event has begun. A variable NAV may be helpful in this regard, as such a NAV, if properly computed, could adjust rapidly in response to losses or liquidity shocks. However, this would be a fundamental change in the nature of MMMFs.

In summary, regulators have certainly made some significant improvements to the structure of the MMMF industry which may reduce the likelihood of runs and improve its resiliency. However, until more significant reforms are undertaken, a clear systemic vulnerability remains. It is important to note that there may well be no single measure that adequately addresses this issue, and some combination of measures may ultimately be the most appropriate course.

Conclusions

As noted above, it is maturity transformation that renders financial intermediaries intrinsically fragile, since by definition an entity engaging in maturity transformation can at no time honor a sudden request for full withdrawals. The explicit, official liquidity and credit backstops by central authorities have reduced this fragility for banks, an arrangement that comes with the quid pro quo of subjecting these institutions to oversight and regulatory capital and liquidity requirements. Consistent with the structures put in place over time between banks and a variety of non-bank intermediaries, the crisis revealed—and was in many respects propagated by—the extent to which banks, had become the core of the backstop arrangements for the non-bank sector. The crisis also revealed the woeful inadequacy of these arrangements, as banks struggled and failed to effectively play this backstop role and governments and central bank had to resort to a variety of extraordinary measures to preserve broader financial stability. Thus, a key lesson emerging from the financial crisis is that our non-bank based system of financial intermediation needs less leverage, asset risk and maturity transformation to survive periods of extreme stress.

Much regulatory reform is focused on better aligning the cost and incentives for banks to provide the backstop support for these activities, with the intent of inducing more socially efficient levels of these activities. Other reforms are focused on reducing reliance by shadow institutions on traditional banks, by having the shadow banking entities themselves provide for the necessary credit and liquidity backstops, and shadow investors bearing the full ex ante economic cost of maturity transformation. Reforms of these types are necessary to ensure that liquidity is provided in a risk-sensitive manner and that full and credible resolution does not depend on official liquidity support.

So, I leave you with three thoughts:

- The motivation for shadow banking has likely become even stronger with increases in capital and liquidity requirements on traditional institutions;
- The objective of reform should be to reduce the risks associated with shadow maturity transformation through more appropriate, properly priced and transparent backstops—credible and robust credit and liquidity "puts."
- Regulation has done some good, but more work needs to be done to prevent shadow credit intermediation from being a continued source of systemic concern.

We have walked through key aspects of the development of the shadow banking system. We—the financial industry and regulators together—understand systemic risk in ways we previously did not. We—the financial industry and regulators together—are beginning to address vexing problems. We—the financial industry and regulators together—must build a solid foundation for the future to avoid systemic risk arising from shadow maturity transformation. Thank you for your time and attention to these important issues.

¹I particularly wish to acknowledge Adam Ashcraft, Lucinda Brickler, Antoine Martin, Jai Sooklal, Nicola Cetorelli, Manjeet Kaur, Tobias Adrian and Patricia Mosser.

²[Tri-Party Repo Infrastructure Reform Task Force and Summary List of Task Force Recommendations](#) [PDF](#).

RESOURCES

[Slides](#) [PDF](#)

Images:



QUICK LINKS

[Summary List of Task Force Recommendations](#)

EXTERNAL LINKS

[Tri-Party Repo Infrastructure Reform Task Force](#)
