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"Short-Term Wholesale Funding Risks"

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President & Chief Executive Officer
Federal Reserve Bank of Boston

*Global Banking Standards and Regulatory and Supervisory Priorities in the Americas**

Lima, Peru
November 5, 2014

Organized by the Association of Supervisors of Banks of the Americas, the Basel Committee on Banking Supervision, and the Financial Stability Institute

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Good morning. I would like to thank Josef Tosovsky, chairman of the Financial Stability Institute of the Bank for International Settlements, for inviting me to this forum to discuss financial stability issues. The Financial Stability Institute serves an important role, increasing awareness of financial stability issues and highlighting actions being taken around the world to address some of the weaknesses that became all too apparent during the financial crisis.

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As I begin, I would note as I always do that the views I will express today are my own, not necessarily those of my colleagues at the Federal Reserve's Board of Governors or the Federal Open Market Committee (the FOMC).

Let me begin by saying that actions taken to bolster the stability and resilience of the financial infrastructure have frequently focused on the *banking* system. In the United States, for example, significant increases in bank capital ratios and important changes in the supervisory process have occurred – steps that put an emphasis on understanding capital and liquidity conditions that would occur during stressful situations. I would argue that one of the most important innovations in bank supervision has been the establishment of credible stress tests.

In terms of preparing better for possible stress conditions, supervisors have made significant progress with organizations focused on traditional deposit-taking and lending activities. However, there is more work to be done with financial organizations — firms that engage in bank-like activities outside the conventional banking system — that have less traditional business models, especially in their sources of funding. Particular concern has been raised by Federal Reserve officials on the reliance by some financial institutions on short-term wholesale funding.[1]

Short-term wholesale funding has been particularly important for firms with large broker-dealer activities. Given their role in making markets, broker-dealers hold an inventory of securities. These securities holdings frequently are financed by collateralized borrowing commonly called repurchase agreements or "repos." A repo, in this context, would involve a broker-dealer (the cash borrower) selling a security (the collateral) to an investor (the cash provider) with an agreement to repurchase the security at a later time. Repos have very short maturities, usually overnight.[2]

There are three parts of the repo market – first the Tri-Party market, where repos are intermediated by two large U.S. "clearing banks"; secondly the General Collateral Finance or GCF market, where broker-dealers finance "general collateral"; and thirdly the bilateral market, where parties engage in repos without an intermediary.

Prior to the recent financial crisis, many had assumed that repurchase agreements would be stable during stressful conditions because they are collateralized with a margin to cushion possible fluctuations in the price of the underlying collateral. Unfortunately, a lesson learned from the financial crisis was that this important form of short-term wholesale funding was actually not nearly as stable as many had expected.

Today I will discuss the experience of short-term wholesale funding during the crisis. I will then explore why the movement of many broker-dealers into domestic holding companies does not obviate the concern over the potentially adverse financial stability risks of short-term wholesale funding. Finally, I will discuss related regulatory reporting requirements, and argue that greater disclosure of the maturity and collateral used in wholesale funding arrangements will enable investors and analysts to better understand, and make more informed pricing decisions with respect to, a borrower's "run risk." I will suggest that this greater disclosure would be useful at the legal entity level of the broker-dealer, as well as at the bank holding company level.

Short-Term Wholesale Funding During the Financial Crisis

The assets of broker-dealers grew quite dramatically during the period leading up to the financial crisis, as did broker-dealers' use of repurchase agreements to finance those assets.[3] **Figure 1** shows that between 2000 and 2007, both broker-dealer assets and the use of repurchase agreements increased by over 150 percent. While broker-dealer assets increased rapidly over the seven-year period, the decline in the wake of the Lehman Brothers failure was precipitous.

Figure 2 highlights that problems within Lehman Brothers were troublesome well before the middle of September 2008 – based on information from the bankruptcy examiner's report. In the three-month period between May 30 and August 29 of 2008, there was a significant funding runoff underway from multiple sources of short-term wholesale funding – particularly involving Lehman Brothers' repurchase-agreement and derivatives counterparties.

Figure 3 shows the dramatic decline in Lehman Brothers' repurchase agreement financing in the Tri-Party repo market as concerns about a failure became more imminent. While declines in repurchase agreements had already occurred in July – particularly for repurchase agreements secured by non-U.S. Treasury security collateral – the withdrawal of repurchase financing became quite acute for Lehman Brothers in the final week before its bankruptcy filing.

Figure 4 shows the aggregate decline in repurchase agreements collateralized by securities not guaranteed by the government[4] for the entire Tri-Party repurchase market. During the second half of 2008, this market dropped from approximately $600 billion to $300 billion. (Please note that the chart only includes the Tri-Party repurchase market and does not include the bilateral repurchase market.) Not surprisingly, the disruption of financing for collateral not guaranteed by the federal government exacerbated the financing difficulties occurring across many different types of financial instruments as the crisis worsened.

Unfortunately, no comprehensive public data source exists for the *entire* repurchase agreement market *by* broker-dealer. Aggregated information on the Tri-Party and GCF repo market is published periodically, but there is little information on bilateral repos.[5, 6] Thus, even the estimates of the size of the entire U.S. repo market require some assumptions. Still, economists at the New York Federal Reserve Bank have provided an estimate of the size of the entire market in 2014.

Figure 5 provides their estimates of the composition of the market. Tri-Party and GCF repo activity accounts for about one-half of the overall repurchase agreement market. However, we do not have other estimates for all of the various components of the entire market – or good estimates of what is held by particular broker-dealers. I will say more in a moment about this lack of comprehensive public data on the market.

What *is* clear is that the events of 2008 present ample reason to have concerns about short-term wholesale funding. The problems caused by reduced financing extend well beyond broker-dealers. Faced with funding problems, many broker-dealers sold securities under duress at fire-sale prices – causing collateral problems for other buyers and sellers of securities.

As previously noted, broker-dealers rely on short-term wholesale funding to finance their securities inventory. During the crisis, the largest U.S broker-dealers (i.e., those affiliated with investment banks) either became bank holding companies or were acquired by bank holding companies. Additionally, many of the other largest broker-dealers are owned by foreign bank holding companies, and soon will be required to form intermediate bank holding companies. Only a few remaining large broker-dealers are not part of either a domestic or foreign bank holding company.[7]

That said, I would now like to discuss why being part of a bank holding company does not obviate wholesale financing concerns.

Broker-Dealers and Bank Holding Companies

Some may assume that broker-dealer runs should not be a concern, now that most of the largest broker-dealers are in bank holding companies. However, it is important to note that, to protect depositors and the financial well-being of banks, there has historically been an array of bank laws and regulations designed to, among other things, ensure bank liquidity – and these longstanding laws and regulations place significant restrictions on the ability of a bank to fund liquidity problems or other activities of its nonbank affiliates or the nonbank subsidiaries of its bank holding company. In addition, the Dodd-Frank legislation has made it even more difficult for banks to fund their nonbank affiliates, even during periods of financial stress.

The Federal Reserve has legal authority to provide loans to banks facing *liquidity* problems but *not solvency* issues.[8] These so-called Section 10(b) or "discount window" loans are available to the banks, but not to the holding company parent or nonbank subsidiaries.

During the financial crisis, many nonbank affiliates of bank holding companies and nonbank financial institutions had significant liquidity problems.[9] Section 13(3) of the Federal Reserve Act allows the Federal Reserve to lend to nonbanks under "exigent circumstances." Commonly referred to as its "lender of last resort" authority, that section enabled the Federal Reserve to take emergency measures and extend loans to nonbanks, such as broker-dealers that acted as primary dealers for the Federal Reserve, during the crisis.

While lending facilities made available to broker-dealers significantly mitigated problems with broker-dealer financing flows that were contributing to the crisis, such funding authority is now subject to additional limitations. In particular, the Dodd-Frank Act[10] now requires that Federal Reserve facilities or lending programs have broad-based eligibility and be designed to provide liquidity to the financial system (not assist just one individual firm). The Dodd-Frank Act also prohibits the use of such facilities by firms that are insolvent and requires that such facilities be approved by Treasury.

In addition, the Dodd-Frank legislation encourages supervisory actions that would prevent the need for future 13(3) lending facilities to be established at all. That is, nonbank affiliates of bank holding companies and financial firms that are not banks should have the capacity to fund themselves through stressful situations without the expectation of resorting to Federal Reserve emergency powers. In addition, the likely intent of the legislation is to ensure that such institutions do not take on excessive risk today based on an assumption that subsequent severe losses will be backstopped by Fed lending.

In addition to the limitations on the Federal Reserve's emergency lending that I have noted, there are also other statutory rules and regulations designed to protect banks, but not nonbank affiliates, as shown in **Figure 6**. For example, Sections 23A and 23B of the Federal Reserve Act are intended to protect the bank so that neither a bank nor the FDIC deposit insurance fund suffers losses from transactions between a bank and its nonbank affiliates. A bank's extensions of credit to and purchases of assets from any one affiliate are limited to 10 percent of the bank's capital stock and surplus.[11] In addition, bank transactions with affiliates need to be done at market terms.[12] These laws are intended to prevent the bank from being exposed to losses at, or caused by, nonbank affiliates.[13]

During the crisis, the Federal Reserve granted temporary exemptions from Section 23A restrictions, to facilitate the borrowing needs of unaffiliated market participants.[14] In addition, exemptions from the quantitative limits, collateral requirements, and restrictions on "low-quality" asset purchases were granted to banks in September of 2008.[15] However, as previously mentioned, the Dodd-Frank Act was intended to further restrict some of the precedents and emergency powers lawfully used during the crisis. In particular, the FDIC must now concur with any such exemptions, and the FDIC may object to the granting of an exemption if the exemption would present an unacceptable risk to the Deposit Insurance Fund.[16] Again, these restrictions highlight the need to take actions in normal times, to avoid such exemptions ever being needed in the future.

Finally, there has historically been an expectation that bank holding companies must serve as a "source of strength" to their bank subsidiaries. This was further codified in the Dodd-Frank Act.[17] Thus, a bank holding company's support of a nonbank subsidiary would be limited by its primary obligation to support its *bank* subsidiaries.

Overall, the legislation that was designed to protect banks pre-crisis, and the further limitations imposed by the Dodd-Frank Act, pose significant impediments to future funding of broker-dealers by the Federal Reserve or their affiliated bank should they experience a run. These impediments make it imperative that preventive measures be taken to ensure that in future crises, broker-dealers' financing mechanisms are robust enough to endure potential financial stress. And clearly there should not be an expectation that such runs could necessarily be addressed through the bank holding company structure.

The Need for More Disclosure on Balance Sheet Items that are Susceptible to Runs

Both the significant reduction in repurchase agreement financing during the crisis and the difficulty in addressing runs through the bank holding company structure provide a significant motivation for taking appropriate preventive actions. Specifically, Federal Reserve Governor Daniel Tarullo and Chair Janet Yellen have suggested regulatory measures such as additional capital charges for banks that house significant short-term wholesale funding operations.

While these additional regulatory measures are important, to date there has not been a significant focus on *public* and more timely disclosure of broker-dealers' financing activities. Disclosure has the potential to provide better information on the degree of reliance on repurchase agreements – particularly repurchase agreements involving collateral not guaranteed by the federal government – to the institutions' stakeholders interested in the extent of its risk-taking, such as holders of its long-term debt. Because of the lack of comprehensive disclosure requirements in place at the time of the crisis, neither the significant ramp-up in the use of repurchase agreements nor the movement to repos that were backed by less secure collateral were obvious to investors.[18]

Let me recognize that disclosure is not a standalone cure-all. It has the potential to be an important supplement to other important actions, like capital requirements.

Figure 7 shows the line items typically included on the public forms filed by broker-dealers on an annual basis (the SEC's so-called FOCUS Report, Part III).[19] Given that broker-dealers played a key role in the crisis, and are often very large institutions, it may be appropriate to consider whether more complete disclosures by broker-dealers would better leverage the role of investors and analysts in providing additional market discipline. Such discipline requires more transparency and frequency of data reporting than is occurring currently.

In particular, given the emphasis on run risks at broker-dealers, it would be useful to have far more detailed publicly available data on repurchase agreements used to finance broker-dealers and related affiliates.[20] However, for more transparency to be beneficial, the right information needs to be disclosed. Information – such as repo collateral composition (for example, U.S. Treasury, private collateralized mortgage obligations), haircuts, the counterparty, and maturity structure – reported in a timely manner, would provide investors an opportunity to observe changes in financing patterns, and might prevent management from taking risks that its investors may deem excessive.

Had such information been available prior to the crisis, the reliance on short-term funding based on both government and nongovernment collateral (the latter meaning collateral not guaranteed by the federal government) would have been apparent and might have resulted in greater market discipline than we saw leading up to the crisis.

While bank holding companies report far more detail than is found in the FOCUS reports, their disclosures likewise include only limited detail on repurchase agreements. Bank holding companies' reliance on short-term wholesale funding indicates that further detail on repurchase collateral and maturities at the consolidated bank holding company level would also be useful. In addition, because of the potential for "window dressing," having quarterly peak and average information *as well as* end of quarter information on these positions would be helpful. However, such detail would not cover broker-dealers that are not currently part of bank holding companies – which is why the legal entity detail in the FOCUS reports would be particularly important.

Work has begun to look for opportunities to provide more detail on short-term wholesale funding in bank holding company reports. I am hoping that this effort will develop sufficient detail on collateral type and maturity structure so that risks in this market can be better assessed, going forward.

Concluding Observations

During the financial crisis a large number of broker-dealers either failed, were acquired, formed bank holding companies, or needed support from parent companies. These problems occurred despite the significant intervention to support broker-dealers that was provided during the crisis, in order to restore credit flows in the financial infrastructure.

A key element of the problems was the over-reliance on short-term wholesale funding.

Today I have discussed why potential runs on large broker-dealers may be difficult to preclude or offset, even if the broker-dealer is in a bank holding company. The clear intent of the myriad regulations on bank holding companies and banks is to protect the banks and prevent bank support for affiliated nonbank subsidiaries (like broker-dealers) in the bank's holding company at the expense of the bank. This highlights the need for additional actions to limit the likelihood of future problems or crises that could require government interventions.

As noted previously, a significant capital charge on short-term wholesale funding would certainly help. In addition, much greater disclosure on "runnable" liabilities would utilize the power of markets to help curb unhealthy levels of reliance on such funding. More detailed reporting requirements should include more disclosures on both the collateral composition and maturity structure of repurchase agreements.

Thank you again for inviting me to speak with you today about the lessons of the crisis and the as-yet unfinished work of *preventing future problems* – in part by addressing short-term wholesale funding risks.

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[1] Governor Tarullo noted in testimony on September 9, 2014:
"Federal Reserve staff is currently working on three sets of initiatives to address residual short-term wholesale funding risks. As discussed above, the first is a proposal to incorporate the use of short-term wholesale funding into the risk-based capital surcharge applicable to U.S. GSIBs. The second involves proposed modifications to the BCBS's net stable funding ratio (NSFR) standard to strengthen liquidity requirements that apply when a bank acts as a provider of short-term funding to other market participants. The third is numerical floors for collateral haircuts in securities financing transactions (SFTs)--including repos and reverse repos, securities

lending and borrowing, and securities margin lending."
http://www.federalreserve.gov/newsevents/testimony/tarullo20140909a.htm

He also noted on May 3, 2013:

"…existing bank and broker-dealer risk-based capital rules do not reflect fully the financial stability risks associated with SFTs. Accordingly, higher, generally applicable capital charge applied to SFTs might be a useful piece of a complementary set of macroprudential measures, though an indirect measure like a capital charge might have to be quite large to create adequate incentive to temper the use of short-term wholesale funding."
http://www.federalreserve.gov/newsevents/speech/tarullo20130503a.htm

Chair Yellen noted on July 2, 2014:

"… The Basel III framework also includes liquidity requirements designed to mitigate excessive reliance by global banks on short-term wholesale funding.

"… In addition, measures are being undertaken to address some of the potential sources of instability in short-term wholesale funding markets, including reforms to the triparty repo market and money market mutual funds – although progress in these areas has, at times, been frustratingly slow.

"Additional measures should be taken to address residual risks in the short-term wholesale funding markets. Some of these measures – such as requiring firms to hold larger amounts of capital, stable funding, or highly liquid assets based on use of short-term wholesale funding – would likely apply only to the largest, most complex organizations. Other measures – such as minimum margin requirements for repurchase agreements and other securities financing transactions – could, at least in principle, apply on a marketwide basis."
[http://www.federalreserve.gov/newsevents/speech/yellen20140702a.htm]

She also noted, on April 15, 2014:

"…let me highlight one data point that suggests that there may be net social gains from introducing further reforms to address short-term wholesale funding risks. In 2010, the Basel Committee assessed the long-term economic impact of stronger capital and liquidity requirements for global banks. Factoring in the Basel III capital requirements and the NSFR, the Basel study suggested that tightening risk-based capital and liquidity requirements would, on net, provide economic benefits, and that benefits would continue to accrue at even higher levels of risk-based capital than are part of Basel III.

"While it would be a mistake to give undue weight to any one study, this study provides some support for the view that there might be room for stronger capital and liquidity standards for large banks than have been adopted so far."
[http://www.federalreserve.gov/newsevents/speech/yellen20140415a.htm]

[2] See the paper by Krishnamurthy et al, "Sizing Up Repo" (http://www.gsb.stanford.edu/sites/gsb/files/Publication%201.pdf), which states "Maturities get compressed with the onset of the financial crisis. Figure 4 illustrates the shortening in the maturity structure of repos during the crisis. In 2007, the 99th percentile of maturity (weighted by notional amount) reached 250 business days, but it subsequently shrank to 60 business days in 2008. The reduction in maturity is consistent with an increased demand for liquidity from cash-investors, since shorter maturity repo is de-facto more liquid than longer maturity repo." Krishnamurthy et al.'s analysis is limited to MMMFs and securities lending data, which they estimate covers more than 50 percent of repo lending that flows into the shadow banking system. Importantly, it does not include bilateral repos.

[3] As mentioned in the speech text, there are alternative repurchase markets that deal with the transfer of collateral and payment somewhat differently. More detail on these markets is provided by Copeland, Adam, Martin, Antoine, and Michael Walker, "The Tri-Party Repo Market Before the 2010 Reforms," NY Fed Staff Report no. 477 November 2010.

[4] Nongovernment securities are those not backed by the full faith and credit of the federal government, such as asset-backed securities, private label CMOs, corporate securities, equities, money market instruments, CDOs, international securities, municipality debt, trust receipts and whole loans. Government-backed securities include Treasury securities, agency securities, and agency MBS.

[5] The Federal Reserve Bank of New York publishes Tri-Party and FICC GCF Repo information monthly. http://www.newyorkfed.org/banking/tpr_infr_reform_data.html

[6] The Office of Financial Research, in conjunction with the Federal Reserve and Securities and Exchange Commission, recently announced a project to gather information on the bilateral repo market from industry participants. Participation is voluntary. It is expected that aggregated data from the project will be published. *See* http://www.treasury.gov/connect/blog/Pages/OFR-Teams-with-Fed-to-Fill-Key-Gap-in-Financial-Data.aspx

[7] There are, however, many independent smaller broker-dealers.

[8] Only banks are eligible to borrow from the Federal Reserve Banks' "discount window" under Section 10B of the Federal Reserve Act.

[9] As did many banks.

[10] Dodd-Frank Act Section 1101.

[11] More precisely, a bank's "covered transactions" with any one affiliate are limited to 10 percent of the bank's capital stock and surplus, and a bank's covered transactions with all affiliates are limited to 20 percent of the bank's capital stock and surplus. "Covered transactions" include extensions of credit, purchases of securities issued by an affiliate, purchases of assets, repurchase agreements and securities borrowings.

[12] Federal Reserve Act Section 23B.

[13] The Federal Reserve Board has indicated that the dual purposes of Federal Reserve Act Section 23A are to (i) protect the bank from suffering losses on transactions with nonbank affiliates and (ii) to limit the extension of the federal deposit insurance safety net to non-depository institutions. *See* 67 *Fed. Reg.* 76560 (Dec. 12, 2002); *See also* August 20, 2007 letter from Robert deV. Frierson to Patrick S. Antrim.

[14] *See, e.g.*, August 20, 2007 letter from Robert deV. Frierson to Carl Howard (granting a temporary exemption from FRA Section 23A to allow Citibank, N.A. to engage in certain securities financing transactions with an affiliated broker-dealer to facilitate the extension of credit to third party market participants in need of short-term liquidity to finance their holdings of certain mortgage loans and related assets), available at:

http://www.federalreserve.gov/boarddocs/legalint/federalreserveact/2007/20070820b/20070820b.pdf

[15] 73 *Fed. Reg.* 54307, Sept. 19, 2008 (amending 12 C.F.R. Section 223.42 to include an exemption from the quantitative limits, collateral requirements and low-quality asset purchase prohibition of Federal Reserve Act Section 23A to "facilitate the ability of a …[bank] (such as an SEC-registered broker-dealer) to obtain financing, if needed, for securities or other assets that the affiliate ordinarily would have financed through the U.S. Tri-Party repurchase agreement market.")

[16] Dodd-Frank Act Section 608(a)(4). The FDIC may object to the granting of an exemption if the exemption would present an unacceptable risk to the Deposit Insurance Fund.

[17] Dodd-Frank Act Section 616(d).

[18] Also, investors may not have been fully aware of tenors, in addition to collateral quality, as 10-Ks provide a weighted average maturity.

[19] The Notes accompanying the Consolidated Statement of Financial Condition provide some additional detail.

[20] While my focus has been on repurchase agreements, more disclosure of other forms of short-term wholesale funding and securities lending activities might warrant further consideration.