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Statement by

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Chairmen Crapo and Heller, Ranking Members Warner and Warren, other subcommittee members, I would like to thank you for inviting me to testify today on trends in fixed-income markets. Because these markets perform important functions in our economy, it is imperative that we understand the significant changes they are currently undergoing. As I will discuss, a number of factors have been driving these changes.

Some market participants have expressed concerns about low liquidity across fixed-income markets, although many recent studies have found it difficult to identify such a broad reduction. It may be that liquidity has deteriorated only in certain market segments. It may also be that, even if liquidity is adequate in normal conditions, it has become more fragile, or prone to disappearing under stress.

The sharp swing in Treasury prices that took place on October 15, 2014, led the Federal Reserve Board, in conjunction with the Treasury Department, the Commodity Futures Trading Commission, the Federal Reserve Bank of New York, and the Securities and Exchange Commission, to create a Joint Staff Report and to host a conference on the structure of Treasury markets at the Federal Reserve Bank of New York (FRBNY) in October 2015.¹ The staff of the four agencies and the FRBNY compiled transactions data across both Treasury cash and futures markets and analyzed the factors that could have caused the rapid rise and subsequent reversal in Treasury prices in such a short span of time. This analysis did not find a single factor that caused the sharp swing in prices.

¹ See *Joint Staff Report: The U.S. Treasury Market on October 15, 2014*, U.S. Department of the Treasury, Board of Governors of the Federal Reserve System, Federal Reserve Bank of New York, U.S. Securities and Exchange Commission, U.S. Commodity Futures Trading Commission, July 13, 2015, www.treasury.gov/press-center/press-releases/Documents/Joint_Staff_Report_Treasury_10-15-2015.pdf, and *Conference Summary: The Evolving Structure of the U.S. Treasury Market (October 20–21, 2015)*, Federal Reserve Bank of New York, October 20, 2015, www.newyorkfed.org/medialibrary/media/newsevents/events/markets/2015/Conference-Summary.pdf.

As had already occurred in equity markets, advances in computing and communications technologies have allowed proprietary trading firms (PTFs, also often called high-frequency trading firms) to capture a majority of the interdealer market in Treasuries. As a consequence of these changes, trading in Treasury markets now moves at extreme speed. It may be that these changes have also led to greater liquidity risk, or sudden declines in liquidity. Researchers at the FRBNY have shown that spikes in volatility and sudden declines in liquidity have become more frequent in both Treasury and equity markets.² There is also evidence that liquidity shifts more rapidly and hence is less predictable in these markets.³ In contrast, researchers have not found evidence of these behaviors in corporate bond markets, where traditional dealers still intermediate most trades and there is much less high-frequency trading.⁴

Apart from such episodes of sudden volatility, questions about whether liquidity in fixed-income markets has broadly deteriorated are difficult to answer definitively. In exploring these topics, it is important to distinguish between Treasury and corporate bond markets, which have different characteristics.

In Treasury markets, traditional measures of liquidity, such as bid-ask spreads, have been fairly stable in recent years.⁵ But the changing market structure has also meant smaller average

² See Tobias Adrian, Michael Fleming, Daniel Stackman, and Erik Vogt, *Has Liquidity Risk in the Treasury and Equity Markets Increased?*, Liberty Street Economics (blog), October 6, 2015, <http://libertystreeteconomics.newyorkfed.org/2015/10/has-liquidity-risk-in-the-treasury-and-equity-markets-increased.html#.Vv7UvOab-p0>.

³ See Dobrislav Dobrev and Ernst Schaumburg, *The Liquidity Mirage*, Liberty Street Economics (blog), October 9, 2015, <http://libertystreeteconomics.newyorkfed.org/2015/10/the-liquidity-mirage-.html#.Vv7Woeab-p0>.

⁴ See Tobias Adrian, Michael Fleming, Or Shachar, Daniel Stackman, and Erik Vogt, *Has Liquidity Risk in the Corporate Bond Market Increased?*, Liberty Street Economics (blog), October 6, 2015, http://libertystreeteconomics.newyorkfed.org/2015/10/has-liquidity-risk-in-the-corporate-bond-market-increased.html#.Vwu8_Oab-p0.

⁵ See Tobias Adrian, Michael Fleming, Daniel Stackman, and Erik Vogt, *Has U.S. Treasury Market Liquidity Deteriorated?*, Liberty Street Economics (blog), August 17, 2015, <http://libertystreeteconomics.newyorkfed.org/2015/08/has-us-treasury-market-liquidity-deteriorated.html#.Vv7HQDP2bT4>.

trade sizes,⁶ and participants now must break up their larger trades and employ complicated strategies in order to avoid moving prices. Accurately measuring the effect of trading on prices, perhaps the most fundamental gauge of market liquidity, can be quite difficult in such an environment.⁷ There are also differences between on-the-run Treasury securities, the securities that were most recently issued and that are the most liquid, and off-the-run Treasury securities. However, observable measures such as the spread between on- and off-the-run Treasury securities do not show any trend change in liquidity between the two market segments since the financial crisis.

In corporate bond markets, estimated bid-ask spreads have declined, indicating that, if anything, liquidity may have improved.⁸ However, given the nature of the corporate bond market, these estimates are based on transactions rather than on direct observations of quotes to buy or sell these bonds. What we can directly observe is that trade sizes and turnover have declined in the most actively traded corporate bonds as they have in Treasury markets.⁹ And although observable measures of *overall* liquidity in corporate bond markets appear good, there is some evidence that liquidity has deteriorated for the lowest-rated bonds.¹⁰ Trading in these

⁶ Ibid.

⁷ See for example, Terrence Hendershott, Charles M. Jones, and Albert J. Menkveld, "Implementation Shortfall with Transitory Price Effects," in *High Frequency Trading: New Realities for Trades, Markets and Regulators*, David Easley, Marcos López de Prado, and Maureen O'Hara (editors), Risk Books (London: 2013), http://albertjmenkveld.org/public/papers/chapter_ELOv5.pdf.

⁸ See Bruce Mizrach, "Analysis of Corporate Bond Liquidity," Financial Industry Regulatory Authority (FINRA), Office of the Chief Economist Research Note, December 2015, www.finra.org/sites/default/files/OCE_researchnote_liquidity_2015_12.pdf.

⁹ Ibid.

¹⁰ See Tobias Adrian, Michael Fleming, Erik Vogt, and Zachary Wojtowicz, *Further Analysis of Corporate Bond Market Liquidity*, Liberty Street Economics (blog), February 10, 2016, <http://libertystreeteconomics.newyorkfed.org/2016/02/further-analysis-of-corporate-bond-market-liquidity.html#.Vv7ZcOab-p0>.

less liquid segments may rely heavily on intermediation by dealers, and dealers have scaled back their capital commitments and inventories in corporate bonds since the financial crisis.¹¹

Immediately after the financial crisis, dealers began to move away from a principal model of market making, whereby they would facilitate trades using their own inventories and assume some risk, toward an agency model. Many point to post-crisis regulation as a key factor in this process. One area in particular where market participants point to the impact of regulation is Treasury repo markets. At the 2015 conference, participants noted that required spreads on Treasury repo trades have widened significantly since the crisis and attributed some of this increase to regulation.¹²

But post-crisis regulations have also greatly strengthened the major banks and made another financial crisis far less likely. Evidence also indicates that certain regulations have *increased* liquidity; for example, the mandate that more standardized derivatives be traded on organized exchanges or platforms appears to have improved market functioning.¹³ My view is that these regulations are new, and we should be willing to adjust them as we learn. That said, we should also recognize that some reduction in market liquidity is a cost worth paying in helping to make the overall financial system significantly safer.

It is important, however, not to overemphasize any effects of regulation. Banks have independently recalibrated their own approaches to risk and scaled back their market-making

¹¹ See Hendrik Bessembinder, Stacey E. Jacobsen, William F. Maxwell, and Kumar Venkataraman, *Capital Commitment and Illiquidity in Corporate Bonds*, Social Science Research Network (SSRN), March 21, 2016, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2752610.

¹² *Conference Summary: The Evolving Structure of the U.S. Treasury Market (October 20–21, 2015)*, Federal Reserve Bank of New York, 2015, www.newyorkfed.org/medialibrary/media/newsevents/events/markets/2015/Conference-Summary.pdf.

¹³ See Evangelos Benos, Richard Payne, and Michalis Vasios, *Centralized trading, transparency and interest rate swap market liquidity: evidence from the implementation of the Dodd-Frank Act*, Bank of England, Staff Working Paper No. 580, January 15, 2016, www.bankofengland.co.uk/research/Documents/workingpapers/2016/swp580.pdf.

activities. Dealers significantly reduced their fixed-income portfolios beginning in 2009, well ahead of most post-crisis changes in regulation.¹⁴

Corporate debt issuance has been at record levels in recent years. With dealer balance sheets shrinking, buy-side investors now bear greater liquidity risk. It is important that mutual funds and other investors in fixed-income securities continue to take measures to understand and manage these risks. In addition, we should distinguish between *systemic* risk and *market* risk. The risks to investors generally represent market risk and do not appear to pose risks to the financial system as a whole. The movement of these risks away from the nation's most systemically important financial institutions is one of many reasons that they are far stronger and more resilient than before the crisis.

Markets are adapting to this new environment. Where there is an unmet demand for liquidity, new market makers are emerging to meet that demand. For example, some PTFs are seeking entry to dealer-to-customer platforms for Treasury trading. Seven new electronic trading venues entered the market for corporate and municipal bonds over the last two years, and several more are preparing to launch this year.¹⁵ While there is no guarantee of success for these entrants, markets will continue to evolve. Thus, it is too early to judge the ultimate impact of factors affecting fixed-income liquidity.

One thing that will help in this judgment is better data. At the 2015 conference, many market participants expressed a desire for more publicly available data on Treasury markets. It is striking that so little data is available--even to regulators--on trading in our nation's Treasury

¹⁴ See Tobias Adrian, Michael Fleming, Daniel Stackman, and Erik Vogt, *What's Driving Dealer Balance Sheet Stagnation?*, Liberty Street Economics (blog), August 21, 2015, <http://libertystreeteconomics.newyorkfed.org/2015/08/whats-driving-dealer-balance-sheet-stagnation.html#.Vwz69Oab-p0>.

¹⁵ See *SIFMA Electronic Bond Trading Report: US Corporate and Municipal Securities*, Securities Industry and Financial Markets Association (SIFMA), February 17, 2016, www.sifma.org/issues/item.aspx?id=8589958906.

market. It took considerable effort to gather detailed trade data for just the single day of October 15, 2014, in writing the Joint Staff Report. The Board has been supportive of the Treasury Department's current Request for Information (RFI), which will be concluding on April 22. The RFI will provide information on this issue, as we reassess the adequacy of public information and of the data available to the official sector for its own monitoring of these markets.

Thank you. I would be pleased to answer any questions you may have.