

*Keynote Remarks of Richard Berner, Director, Office of Financial Research,
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Good afternoon. Thank you to the Center for Financial Policy at the University of Maryland's Robert H. Smith School of Business and to The Clearing House for sponsoring this symposium and for inviting me to be here today. Events like this provide important opportunities to assess and advance the state of our knowledge about financial stability.

The financial crisis that began in 2007 exposed critical gaps in our analysis and understanding of the financial system, in the data and metrics used to measure and monitor financial activities, and in the policy tools available to mitigate potential threats to financial stability. All three gaps — in analysis, data, and policy tools — contributed to the crisis and hampered official efforts to contain it.

Today I would like to assess our progress in addressing those three gaps. Like many speakers you've heard earlier today, I think we have come a long way since the crisis. Our analysis has improved. We better understand how stress exposes financial vulnerabilities. For example, we know vulnerabilities can arise through increased leverage, and through excessive liquidity and maturity transformation, interconnectedness, and opacity. We have begun to improve the quality and scope of financial data. Our policy tools — though untested in a crisis and far from complete — are aimed at making the financial system stronger and more transparent.

That progress is consequential. Nonetheless, gaps in analysis, data, and policy tools persist, limiting our ability to strengthen the financial system.

Three themes will run through my discussion today.

First, activities in banks are relatively well understood and regulated. Financial reform has dramatically strengthened bank balance sheets through new capital and liquidity requirements that are both buffers against loss and hurdles for risk-taking. New regimes for resolving troubled complex financial institutions have improved information available to supervisors and probably forced some companies to alter business models. Stress testing has become a more comprehensive risk-management tool for market participants, thanks in large part to supervisory stress-testing programs that tie it to their assessments of capital and liquidity adequacy.¹

¹ Federal Reserve Governor Tarullo provides a good summary of the state of the art and possible enhancements to current stress test practices in “Stress Testing after Five Years,” at the Federal Reserve Third Annual Stress Test Modeling Symposium, Boston, June 25, 2014.

Second, however, the focus on banks has left activities in markets and nonbanks relatively more vulnerable and, if anything, increased the incentives for endemic regulatory arbitrage. Such incentives, combined with the ability of market participants to innovate, are promoting the migration of financial activity into darker, relatively less supervised corners of the financial system. While some believe that such migration diffuses risk, the crisis illustrated how supposedly less-concentrated risk can be harder to track, assess, and mitigate. And it showed how that migration can create higher leverage through opaque and complex chains of activity, which ultimately transmit and amplify the effects of financial shocks.

Our job is to shine a light on those relatively dark corners to see where the risks are going, assess how much of a threat they might pose, and provide policymakers with financial analysis, information, and evaluation of policy tools to mitigate them.

The third theme connects the first two. It is now widely accepted that a macroprudential perspective — one focused on the stability of the entire financial system and not just on individual entities — is essential to assess threats to financial stability. Similarly, our analytical framework for assessing threats to financial stability must look *across* the system. Metrics to measure interconnectedness are likewise essential. And a “macroprudential toolkit” is needed to mitigate risks and strengthen the system.

We’ve made progress here too. But when it comes to assessing and mitigating risks in markets and in nonbanks, our analysis, our data, and our tools still come up short.

In the rest of my time today, I’ll try to illustrate these three themes by referring to the topics of the panels in this symposium: shadow banking, risks in central counterparties, and the evolution of bank business models and balance sheets.

Regulation and the Shadow Banking System

I’ll begin with the topic of the first panel, shadow banking or what some call market-based finance. Shadow banking, to be specific, involves more than nonbank financing; it also involves the creation of money-like liabilities or cash equivalents. Banks and nonbanks (often through markets) both provide core financial functions, and both businesses must be resilient for the financial system to function smoothly under stress. To anticipate, reduce, and mitigate risks, both banks and nonbanks must be well understood and well regulated. We need good data to quantify that understanding and good tools to strengthen them. Analysis, data, and policy tools are long established for banking, but not as much for shadow banking. Filling those gaps is essential to address the vulnerabilities in those activities.

Let me spend a minute on activities. To assess risks in the shadow banking system, we must look across it, not just at individual shadow banks. When considering how shadow banking might generate, transmit, or amplify systemic shocks, our starting point thus should be the *activities* in which shadow banks engage.

A focus on activities will help us:

1. Understand the basic economics of the diverse business models among shadow banking firms, and thus of the vulnerabilities that these diverse models may present;
2. Analyze *all* the parties to financial transactions, for example, securities financing borrowers and lenders, and the relationships connecting them, rather than on just one part of the system; and,
3. Understand financial vulnerabilities, wherever they arise and whoever engages in them.

Filling gaps in understanding shadow banking risks — gaps in data and analytics — is a priority for the OFR. To date, our focus has been on the risks and vulnerabilities associated with short-term wholesale funding markets, including repo and other securities financing transactions. The crisis clearly exposed key sources of contagion in wholesale funding markets, including investor runs and associated fire sales of assets.²

At the OFR, we've concentrated on filling gaps in three areas. First, we're working to implement and expand the funding map recommended by our advisory committee to understand vulnerabilities across the financial system.³ We use the map to trace (and to simulate) the paths of risk and the durability of funding through specific financial institutions during crises. We also use it to identify gaps in data needed for financial stability monitoring. Second, while much attention and research has focused on the demand for, or uses of, short-term funding, our research also includes investigating the supply or sources of those funds, especially the factors that drive preferences and portfolio allocations from money and other managed funds and institutional cash pools.⁴ Third, we seek to fill the major gaps in U.S. repo data, particularly bilateral repo, and in data on securities lending.

Filling these data gaps is critical to understanding the size and leverage implicit in wholesale funding activity across the financial system, and thus in assessing the risks. In addition, more complete data on securities financing transactions should facilitate analysis of policy tools, such as minimum haircuts, that are aimed at reducing excessive reliance on short-term wholesale

² See Daniel K. Tarullo, "Evaluating Progress in Regulatory Reforms to Promote Financial Stability," speech at the Peterson Institute for International Economics, Washington, D.C., May 3, 2013, and Jeremy Stein, "The Fire-Sales Problem and Securities Financing Transactions," speech at the Federal Reserve Bank of New York Workshop on Fire Sales as a Driver of Systemic Risk in Triparty Repo and other Secured Funding Markets, New York, October 4, 2013.

³ See Andrea Aguilar, Rick Bookstaber, and Tom Wipf, "A Map of Funding Durability and Risk," OFR Working Paper 14-03, Office of Financial Research, Washington, D.C., May 29, 2014.

⁴ See Zoltan Pozsar, "Shadow Banking: The Money View," OFR Working Paper 14-04, Office of Financial Research, Washington, D.C., July 2, 2014.

funding and the procyclicality it often promotes under stress. Such tools are conceptually appealing, but we need more work to evaluate them.⁵

I noted earlier that the focus on the sources of short-term wholesale funding inevitably turns to money market funds. As you know, the Securities and Exchange Commission made important changes to the regulation of money market funds in 2010, and is now considering further options. As the Financial Stability Oversight Council noted in its *2014 Annual Report*, however, any changes in money market fund regulation should be matched by similar regulatory changes for funds that perform similar functions under other legal frameworks.⁶

That is because other sources of short-term wholesale funding are important and growing, and may also pose risks through liquidity transformation. We are beginning to learn from our examination of data from the relatively new Form PF (for private funds) the extent to which this activity is migrating to hedge funds and private equity firms.⁷ Results are highly preliminary, but so far, for example, they suggest that funds with larger leverage ratios may be choosing assets that are relatively easier to sell during a crisis.

However, we should not jump to conclude that there is no risk in such activities. Data gaps still hamper our understanding of those risks. In our work on asset management activities, we found significant data gaps in separate accounts, securities lending, and repo transactions. We identified industry activities that might create vulnerabilities, such as risk taking in separate accounts and the reinvestment of cash collateral in securities lending transactions. Filling those gaps is a priority — one that will also help evaluate policy options for addressing risks associated with asset management activities.

Risks in Central Clearing

Today's second panel discussed risks in central clearing. Clearinghouses have been around for 161 years in the United States — first set up to settle checks, and later to clear and settle other transactions. But their early use was voluntary. Many transactions continued to be cleared and settled bilaterally, without a central counterparty, for example, in many fixed-income securities markets, repo trades, and of course, over-the-counter derivatives. Consequently, risks in such markets may have appeared to be diffused across market participants, seemingly making the

⁵ There are numerous proposals to use minimum haircuts to reduce reliance on short-term funding. See, for example, Committee on the Global Financial System, "The role of margin requirements and haircuts in procyclicality," CGFS Papers, No 36, March 2010; Samuel G. Hanson, Anil K. Kashyap, and Jeremy C. Stein, "A Macroprudential Approach to Financial Regulation," *Journal of Economic Perspectives* 25, no. 1 (Winter 2011), 3–28; Andrew G. Haldane, "Haircuts," Remarks, August 1, 2011; Financial Stability Board, "Strengthening Oversight and Regulation of Shadow Banking: A Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos," August 29, 2013; Daniel K. Tarullo, "Shadow Banking and Systemic Risk Regulation," Remarks at the Americans for Financial Reform and Economic Policy Institute Conference, Washington, D.C., November 22, 2013.

⁶ Financial Stability Oversight Council, *2014 Annual Report*, Washington, D.C., May 7, 2014, p. 8.

⁷ Office of Financial Research, *2013 Annual Report*, Washington, D.C., December 17, 2013, pp. 93-95.

system resilient to shocks from multiple points of failure. But, as we saw in 2008, a bilateral system can exacerbate fire sale dynamics when a counterparty is in distress and is also vulnerable to the failure of one or more counterparties to pay their obligations.

Post-crisis financial reform requiring central clearing was designed to reduce such risks. Central clearing has multiple benefits. It helps reduce some types of risks for end-users, for example, bilateral counterparty risk through multilateral netting. It creates economies in netting and collateral, it improves transparency, and it can facilitate consistent risk management. Some of those benefits accrue from the existence of a central counterparty to manage the risks of its clearing members. That function permits end-users to trade freely with the counterparty of their choice, and places the onus of credit risk management on the central counterparty.

But a central counterparty does not eliminate all risk. It transfers some risk and can concentrate others, such as operational and credit — or default — risk. In practice, the degree of concentration in a handful of large global central counterparties is very high. If one of the large global clearers has significant financial stress, the global financial system will have a big problem. As a result, we need to pay close attention to those central counterparties and make them super-resilient.⁸

In the U.S., Title VIII of the Dodd Frank Act gave the Council the authority to designate financial market utilities, including central counterparties, for heightened prudential supervision, including enhanced and consistent risk-management standards, and allows designated firms to apply for access to the lender of last resort.

Central clearing involves several other potential risks. Here too, gaps in our knowledge, data, and tools make assessing the size of those risks difficult. For example, we don't know how much central clearing would increase procyclicality under market stress through an increase in collateral requirements.

In addition, the costs of central clearing could prompt regulatory arbitrage through migration to uncleared products. Moreover, if international regulations are not well aligned, activities may become concentrated at central counterparties in jurisdictions with relatively weak requirements. Regulators are aware of this possibility. Working through the Financial Stability Board, global regulators have set guidelines for consistently high standards across central counterparties. The relevant U.S. regulators — the Commodity Futures Trading Commission, Federal Reserve, and SEC — are putting in place rules that conform with those international standards for central counterparties that the Council has designated as systemically important.

⁸ Former Federal Reserve Board Chairman Ben Bernanke provides a good summary of the role of clearinghouses in “Clearinghouses, Financial Stability, and Financial Reform,” at the 2011 Financial Markets Conference, Stone Mountain, Ga., April 4, 2011.

To promote resilience in central clearing and its institutions, we need to understand what analytics we need to assess it, what data we need to measure it, and what tools we need to ensure it. It seems obvious that some tools already available in banking would be helpful. For example, central counterparties conduct stress tests to assess their resilience to shocks. But central counterparties are not banks. Continuity of clearing services is critical, especially with few alternative providers.

Our research initiatives in this area so far are aimed at understanding how central clearing may affect risk-taking and portfolio selection by market participants. Does central clearing facilitate intermediation activities through a more efficient mechanism for netting counterparty risk? And in the process, does central clearing provide a more reliable means of hedging risks, or, rather, does it amplify risks in periods of disquiet? Market liquidity has diminished for some instruments, such as single-name credit default swaps. The effect of central clearing on important products, such as credit default swaps on sovereign and corporate debt, remains to be seen.

In related initiatives, the OFR is working to improve the quality and utility of data reported through swap data repositories. With the Financial Stability Board, we are trying to understand requirements for aggregation across trade repositories so policymakers have a consistent global picture of the flow of risks.⁹

In March, we began a joint project with the CFTC to enhance the quality, types, and formats of data collected from registered swap data repositories. Working together, the CFTC and OFR have assessed the quality of the data, and we are developing a plan for understanding swaps and other over-the-counter derivative transactions and their impact on financial stability. This joint project will build on the CFTC's work with the swap data repositories to harmonize data reporting and improve data quality, data standards, and over-the-counter derivative product taxonomies. A staff-level working group is developing the structure of this cooperative project, focusing on data quality and the use of analytical tools.¹⁰

Post-crisis Changes in Bank Balance Sheets

Finally, I would like to turn to the subject we will be exploring in the next panel, the evolution in the composition of bank balance sheets and business models.

Let me repeat: Our gaps in knowledge, data, and policy tools are smaller for banks than they are for nonbanks. Similarly, post-crisis regulatory tools have focused largely on enhancing the resilience of banks rather than nonbanks. Faced with higher capital and liquidity requirements, as

⁹ Financial Stability Board, "Feasibility study on approaches to aggregate OTC derivatives trade repository data," press release, February 4, 2014, available at http://www.financialstabilityboard.org/press/pr_140204.htm (accessed July 8, 2014).

¹⁰ Commodity Futures Trading Commission and Office of Financial Research, "CFTC, OFR Sign Memorandum of Understanding to Improve Data Quality," press release, March 31, 2014, available at <http://www.cftc.gov/PressRoom/PressReleases/pr6899-14> (accessed July 8, 2014).

well as a sustained period of low interest rates, banks are more challenged in their efforts to maintain profitability. Although banks and nonbanks may both be under competitive pressure to take more risk on their balance sheets, banks likely have extra incentives to migrate some activities to less-regulated markets and firms.

There are several examples of this type of regulatory arbitrage. Increased capital requirements and business restrictions have reduced banks' market making activities in bond markets. The changes also prompted banks to sell mortgage servicing rights, private funds, and commodity trading businesses, to reduce their participation in repo markets and to close proprietary trading desks.

For their part, nonbank financial companies have also adjusted their business practices, including establishing new mechanisms to obtain liquidity and expanding business activities into market sectors previously occupied by banks. And in some cases, banks have expanded into new market areas, just as nonbank firms have expanded into traditional banking activities. The continued blurring of lines between banks and nonbanks means that their institutional arrangements may matter less for financial stability than their activities do.

Monitoring and evaluating the transfer of banking activities to nonbank firms and identifying related risks is essential to ensuring that appropriate policy tools are in place to support financial stability.

To do such monitoring, we must ask a series of questions: Where is the business migrating? What does that migration mean for the risk profiles of large complex financial institutions? And, based on lessons from the financial crisis, what does that migration mean for our ability to monitor risks? Do we still know who owns credit risk, and are the owners of those risks prepared for losses?

As I mentioned, mortgage servicing — collecting payments from borrowers, setting aside escrow amounts and insurance payments, and forwarding payments of principal and interest to mortgage owners — has migrated from banks. Nonbank mortgage servicers work for fees, and they lack the risk-mitigation features of banks, such as funding from deposits and official liquidity backstops. New requirements for banks to hold more risk-based capital are prodding banks to transfer mortgage servicing to nonbank firms that lack prudential supervision and capital standards, and where less data are available.

Leveraged lending has also increasingly shifted from banks to markets and nonbanks. Weakening underwriting standards and record-tight credit spreads are warning signs of future risks in leveraged lending. Investors are reaching for yield in leveraged loans through collateralized loan obligations, loan funds, hedge funds, and high-yield bond funds.

Regulators have issued warnings to address risks in leveraged lending, starting with guidance to banks last year from the Federal Reserve and the Office of the Comptroller of the Currency.

These actions have sought to reduce the issuance of leveraged loans and to promote sound underwriting standards, both for leveraged loans retained on banks' balance sheets and loans repackaged for sale. However, the OCC noted in its semiannual risk perspective last month that national bank examiners are continuing to see erosion in underwriting standards for syndicated leveraged loans. It's not clear what other tools the banking supervisors have to address these risks, as demand for exposure to risky loans remains robust outside the banking system.

Other changes in bank balance sheets could have widespread implications for market functioning. A significant development has been the shrinkage of the traditional market-making role played by banks and dealers, as they seek to reduce risk and leverage. Whether the reduction in dealer security inventories is the main source of reduced market liquidity is an open question that requires more analysis and data. But there is no mistaking how lower market liquidity could amplify other financial vulnerabilities in the event of a market shock.

Many other open questions arise from changes in the financial system in response to the legacy of the financial crisis and in reaction to financial reforms. Among them:

- What activities are investors in financial companies rewarding?
- How will banks attract capital from investors and how will they deploy it? Are higher regulatory costs being passed on to customers?
- Will concentration among the biggest banks and the largest nonbank financial companies continue and what are the implications?
- Do higher capital and liquidity requirements and fewer financial intermediaries inevitably result in reduced market liquidity?
- The fixed-income, currency, and commodities trading businesses have begun to migrate from some large complex institutions to other firms, including asset management companies; will their market making take up the slack from largest dealer banks?

In my talk today, I have raised more questions than I have provided answers. That's as it should be. The state of our knowledge, our data, and our policy tools in the three areas covered in this symposium remains limited, especially outside the realm of traditional banking.

Getting the questions right is half the battle. Coming up with answers will take longer. Some may always elude us. But we will keep pursuing those answers, and we can continue to improve. Conferences like this can help us move toward the right answers and sensible solutions. Thank you again for inviting me here today. I would be happy to respond to any questions.