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Financial Stability and Shadow Banks:  
What We Don't Know Could Hurt Us

Remarks by

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at

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I would like to thank the Federal Reserve Bank of Cleveland and the Office of Financial Research (OFR) for inviting me to address this conference.<sup>1</sup>

I have two goals this afternoon. First, I will briefly share my overall assessment of the current state of the vulnerabilities of the financial system. Second, I will outline areas where regulators and researchers can work to fill in gaps in our understanding or in the data available to monitor conditions, especially conditions outside the banking sector.

With regard to current conditions, like most who follow financial sector developments, I see financial vulnerabilities in the United States as greatly reduced from a decade ago, on the eve of the beginning of the global financial crisis. But despite this relatively positive overall assessment, the financial system is dynamic and will evolve over time, and the tightening in regulation of the banking sector may push activity to other areas – and things happen. In particular, while current shadow banking activities are much reduced relative to their level in 2007-08, some developments remain hard to track, and interconnections across the financial system are hard to measure.

Several steps have been taken to reduce shadow banking risks, including restrictions on the support banks can provide to shadow banking activities and reforms designed to lower the incentives of investors to run on money market mutual funds. But more needs to be done. For example, efforts to limit leverage used to finance securities positions, such as the Financial Stability Board's (FSB) recently finalized standard on minimum and potentially countercyclical haircuts on securities financing transactions, represent a further step in the right direction. As the financial system evolves, we will

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<sup>1</sup> The views expressed here are my own and not necessarily those of others at the Board, on the Federal Open Market Committee, or in the Federal Reserve System. I am grateful to Michael Kiley and Nellie Liang for their contributions to this speech.

want, as my colleague Daniel Tarullo emphasized a few weeks ago, “to pursue a policy of case-by-case assessment that permits healthy forms of nonbank intermediation while protecting the financial system.”<sup>2</sup> Doing so will require further development of the economic models that we use to understand interconnections across our complex financial system, along with better data.

## **The Current State of the Financial System**

### *Factors promoting greater structural resilience*

Returning to the current state of vulnerabilities, it is well known that a range of structural improvements mandated by the Congress and undertaken by the Federal Reserve and other regulatory agencies have strengthened financial stability over the past five years. Important changes in regulation and supervision include (1) requirements for more and higher-quality capital and other loss-absorbing capacity at banks; (2) new requirements for liquidity buffers at banks; (3) more stringent capital and liquidity requirements at the largest, most systemically important firms; (4) stress-testing of the largest banks; (5) the shift of the clearing of some derivatives to central counterparties (CCPs); (6) new margin requirements for uncleared derivatives transactions; (7) the designation of systemically important nonbank financial institutions by the Financial Stability Oversight Council; and (8) enhanced sharing of information among regulators and monitoring of risks to financial stability, in which the OFR has played a leading role.<sup>3</sup> This is an impressive list.<sup>4</sup>

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<sup>2</sup> See Tarullo (2015), which also provides a complementary review of the structural changes in shadow banking activities that I will highlight.

<sup>3</sup> The OFR reports its monitoring efforts regularly, including in its annual reports (available on the OFR website at <http://financialresearch.gov/annual-reports>). Research by OFR staff members on similar issues includes Flood and others (2015).

<sup>4</sup> For a more comprehensive review of structural changes since the financial crisis, see my Feldstein lecture (Fischer, 2014).

*Cyclical developments*

Turning to developments in the cyclical behavior of the financial system, at least five factors contribute to financial fragility: (1) high debt burdens at households and firms; (2) elevated leverage and maturity transformation within the financial sector; (3) complexity and interconnectedness in intermediation chains; (4) low risk premiums on assets, especially assets funded with debt; and (5) complacency on the part of investors, supervisors and decisionmakers in the private sector of the financial system.

At the Federal Reserve, staff members present their assessment of vulnerabilities to the financial sector in terms of these risk factors and further organize these risk factors along institutional lines--distinguishing among developments within the banking sector and the nonbank sector, with a special focus on nonbank institutions that engage in maturity transformation or deploy notable degrees of leverage.<sup>5</sup>

Using this framework, I see overall financial vulnerabilities as moderate--that is, considerably lower than a decade ago. Asset valuations and debt burdens in key markets do not appear outsized. Perhaps most important, house prices, while substantially above their recent lows, do not appear broadly elevated relative to rents or disposable income, in contrast to conditions a decade ago. Moreover, household-sector debt growth has been modest and driven mainly by prime borrowers, although rapid growth in auto and student lending across the credit spectrum may create repayment challenges for some households. However, signs of valuation pressures are emerging in commercial real estate markets, where prices have been rising at a solid clip and lending standards have deteriorated, although debt growth has not yet accelerated notably.

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<sup>5</sup> For a discussion organizing vulnerabilities along these lines, see Adrian, Covitz, and Liang (2013).

In the corporate debt markets, valuation pressures had been high for a while, before risk spreads widened and issuance slowed over the past year. The high issuance of corporate debt in recent years is evident in the near-record-high debt-to-asset ratios at speculative-grade and unrated corporations, making this sector vulnerable to adverse shocks. In addition, increased defaults could lead to sharper-than-expected price declines if concerns that liquidity in corporate bond markets is not as robust as in the past--a topic to which I will return in a few minutes--turn out to be justified.

In the financial sector, regulatory capital ratios remain at historically high levels, and liquidity buffers appear sizable in the banking sector. Capital ratios continue to trend upward for both life and property and casualty insurers.

### **A Closer Look at Shadow Banking**

Still, our view of developments at nonbank firms that have traditionally relied on high leverage and short-term wholesale funding and were at the center of the financial crisis--the shadow banking sector--remains incomplete.<sup>6</sup>

One source of information about leverage at nonbanks is the Senior Credit Officer Opinion Survey on Dealer Financing Terms (SCOOS), which the Federal Reserve initiated after the crisis. The SCOOS provides information about the availability and terms of credit in securities financing and over-the-counter derivatives markets--for example, on credit granted by dealers to counterparties such as hedge funds or insurers to

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<sup>6</sup> I have previously discussed the lines between bank and nonbank activities (Fischer (2015)). The term "shadow banking" has been in use for some time, and I continue to use this term in this speech largely to ensure some connection to discussion in recent years. Recently, discussions of bank-like and other financial activities have begun to draw more clear distinctions regarding potential financial stability risks across activities; see Financial Stability Board (2015a) and the recent discussion in Tarullo (2015). Finally, money market mutual fund ( MMMF) shares are not, technically, debt claims. However, the regulatory framework and historical precedent (in which MMMF shares had a fixed net asset value under normal conditions) appear to have led investors to treat such shares similarly to uninsured deposits.

finance investments in securities like commercial mortgage-backed securities or corporate bonds. In recent years, the SCOOS has suggested relatively stable use of leverage across hedge funds and other counterparties--but this qualitative assessment provides only a high level, and very partial, view.<sup>7</sup>

An important risk factor during the mid-2000s was the growth in securitization and the creation of so-called high quality collateral. Currently, the volume of securitization is far below mid-2000s levels, with much of the decline reflecting the collapse in private residential mortgage-backed securities. Further, the low level of activity probably understates the improvement in risk, as pre-crisis securitization was highly reliant on short-term wholesale funding through vehicles such as asset-backed commercial paper programs to finance the highest-rated tranches.

More generally, wholesale short-term liabilities have declined across the board. For example, the gross volume of repos (repurchase agreements) fell from its peak of nearly \$5 trillion in early 2008 to about \$3 trillion by early 2009, while total assets of money market mutual funds contracted from approximately \$3.75 trillion at the end of 2008 to about \$2.5 trillion in recent years.<sup>8</sup> The decline in the volume of repos is part of a more general pullback from risk among broker-dealers and their clients, and dealer balance sheets are much smaller, on balance, than pre-crisis.

Some, perhaps even the lion's share, of the retreat in securitization, money market mutual fund shares, and repos is probably due to investors' memory of the financial crisis. Institutions and individuals burned by runs and losses from fire sale conditions

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<sup>7</sup> The SCOOS is available on the Board's website at [www.federalreserve.gov/econresdata/releases/scoos.htm](http://www.federalreserve.gov/econresdata/releases/scoos.htm).

<sup>8</sup> See Bao, David, and Han (2015).

have, at least for the time being, adopted a more prudent stance. But structural changes have also played a role. The largest broker-dealers are now part of bank holding companies and are therefore subject to consolidated supervision by the Federal Reserve, which includes regular stress-testing and tighter capital and liquidity requirements. The new liquidity rules for large banks and the capital surcharge for systemically important banks discourage reliance on short-term wholesale funding. And the ability of banks to provide support to structured investment vehicles has been substantially curtailed through both restrictions on the accounting treatment of formerly off-balance-sheet exposures and more stringent capital requirements, including the supplementary leverage ratio applying to on-balance-sheet assets and off-balance-sheet exposures.

Indeed, some have asked whether the reduction in broker-dealer activities has gone too far, citing heightened concerns over a possible shortage of bond market liquidity as one example of potentially negative consequences. Most measures of market liquidity in Treasury and corporate bond markets have not shown signs of a deterioration in market functioning in recent years. There are certainly concerns that bond market liquidity may not be as robust as in the past, which could lead to sharper-than-anticipated price movements--of which the bond market events in mid-October 2014 are often cited as an example. However, a review of the evidence does not point clearly to a significant role for the reduction in broker-dealer balance sheets or regulatory changes as being responsible for any shifts in liquidity.<sup>9</sup> Other structural factors, such as the long-term trends toward higher participation of high-frequency trading firms in Treasury markets and greater disclosure of corporate bond trades, have been important.

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<sup>9</sup> For a discussion of developments in U.S. Treasury markets on October 15, 2014, see U.S. Treasury and others (2015).

In my view, the reduction in leverage and maturity transformation associated with better regulations leaves the financial system much more resilient -- even if such regulations have modestly affected market liquidity.

### **What We Know and What We Do Not**

Despite my assessment of current vulnerabilities, conditions can change quickly. And important blind spots in our view of the financial system remain, in part owing to data gaps. When it comes to financial stability, what you do not know really can hurt you--and there remains a good bit we do not know.<sup>10</sup>

This lack of data can impede the design of regulation. There is a long history of data collection focused on banks, and supervisory data have contributed to our quantitative approach to regulation and supervision. For example, when we examine the likely implications of the failure of an institution's largest counterparty, we learn a great deal about the health of that institution and gain greater insight into its connections, through that counterparty, to other institutions.

But data on a range of activities--including securities lending, bilateral repos, and derivatives trading--that create funding and leverage risks remain inadequate and hence could prove destabilizing if sufficiently large or widespread. We gain some insight into these markets through our supervisory relationships with the largest bank holding companies, but the activities of important nonbank market participants, such as asset managers, and the interconnections across institutions remain more opaque.

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<sup>10</sup> The phrase "what you don't know can't hurt you" is well known. According to the *Oxford Dictionary of Proverbs*, the oldest written version of this saying comes from 1576, in *Petit Palace*, by G. Pettie (as noted in Miller (2009)). (I am indebted to Michael Kiley for this reference.)

Efforts are under way to deal with these gaps: The Legal Entity Identifier initiative is working to allow regulators and private counterparties to trace activities by institution; the OFR, the Securities and Exchange Commission, and the Federal Reserve are cooperating with the industry to collect data on bilateral repos; and the FSB has finalized standards for collection of data on securities financing transactions.<sup>11</sup>

Regulators in the United States and abroad have begun to require the reporting of detailed derivatives transaction data to trade repositories. Unfortunately, as a recent report shows, inadequate data standards and limitations on authorities' access to trade repository data have prevented the benefits of derivatives trade data reporting from being fully realized.<sup>12</sup>

An illustration of the possible interaction between better data and better policies is the potential role of margins in securities financing transactions. The more stringent regulation of the banking sector may push short-term financing activities to less regulated entities. To limit such regulatory arbitrage, the Federal Reserve will be developing regulations that would establish minimum margins for securities financing transactions on a marketwide basis. The margins would apply to all market participants, thereby mitigating the risks associated with regulation along institutional lines. Improved data collection, such as mentioned earlier, would allow a better view of changes in conditions and potentially contribute to the deployment of countercyclical margins, thereby further decreasing the chances of a dynamic that culminates in adverse fire sales.

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<sup>11</sup> Information on the cooperative effort to collect data on bilateral repos is available on the OFR website at <http://financialresearch.gov/data/repo-data-project>. For details on the FSB's standards for collecting data on securities financing transactions, see Financial Stability Board (2015c).

<sup>12</sup> See Financial Stability Board (2015b).

### **Data Are Not Enough: We Need Theory, Too**

While the steps to improve data taken so far will help, gaps will remain, especially with regard to unregulated or weakly regulated entities. These gaps impede both market participants' ability to discipline the risks taken by institutions and supervisors' ability to take prompt action. Nonetheless, I would also like to emphasize to this group of researchers that better data, by themselves, are only the start of the journey to better understanding.

An important area in need of development is economic modeling on interconnectedness, particularly on the interaction of shadow banking, banks, and the broader financial system.<sup>13</sup> It is instructive to consider the distress at Lehman Brothers and American International Group, Inc. (AIG), in the late summer and fall of 2008 and of Long-Term Capital Management (LTCM) in the late summer and fall of 1998. In each case, banking supervisors and market participants appear not to have appreciated--at least until very late--the degree to which these institutions were intertwined with large banks and other financial institutions; in each case, the concerns over the direct connections of these institutions were compounded by uncertainty regarding their positions, the positions of other institutions, and the potential fire sale dynamics that could occur under forced liquidation of their assets. Most obviously, in each case the institution was not a bank, and understanding the implications of their distress required understanding the possibly different implications of their business models from those of banks, their interconnections with banks, and their interconnections with the broader financial system. Of course,

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<sup>13</sup> Then Federal Reserve Board Vice Chair Yellen discussed these issues in January 2013 (Yellen, 2013), in a speech that includes a detailed discussion of possible interactions among financial institutions, along with very clear graphic representations of potential systemic interactions.

many conditions across these episodes were very different, as were their end results in the falls of 1998 and 2008. Because of those differences, distress at LTCM was resolved by a private-sector solution with little discernible effect on the U.S. macroeconomy, while the fall of 2008 culminated in the Great Recession. But the commonalities across episodes illustrate similar data and conceptual gaps.

Focusing on the conceptual gaps, the theoretical and empirical literature on interconnectedness sheds only partial light on the issues confronted in each of the highlighted episodes.<sup>14</sup> In addition to direct connections, common exposures and contagion are important sources of interconnectedness and fragility, as emphasized by Bagehot nearly 150 years ago.<sup>15</sup> On the empirical side, researchers have worked to construct networks of banks or broader sets of institutions based on direct connections or common holdings, but incomplete data and modeling challenges have typically implied a focus on only parts of institutions' balance sheets or on a subset of market participants.<sup>16</sup> On the theoretical side, a strand of literature notes that the connections among institutions in each of the previous frameworks may be too small to explain the types of systemic distress witnessed during the crisis, and instead emphasizes that complexity within firms and in interconnections heightens the risk of correlated runs.<sup>17</sup> This insight rings true: The complexity of Lehman's, AIG's, and even LTCM's balance sheets and interactions with other institutions almost surely contributed to market spillovers during their distress.

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<sup>14</sup> For a discussion of various empirical measures outside the network literature, see Bisias and others (2012); and Kara, Tian, and Yellen (2015).

<sup>15</sup> Bagehot (1873 [1897]) has long been viewed as a classic reference describing panics in money markets and the proper response of the central bank to such panics.

<sup>16</sup> Duarte and Eisenbach (2015) examine interconnections associated with fire sales and common exposures. Hale, Kapan, and Minoiu (2014) examine a bank network and discuss related approaches.

<sup>17</sup> Caballero and Simsek (2013) discuss complexity and network stability. Research emphasizing direct connections and common holdings includes Allen, Babus, and Carletti (2012); and Acemoglu, Ozdaglar, and Tahbaz-Salehi (2015).

But it is also true that little research has been undertaken that distinguishes between banks and nonbanks, or highlights how their interactions are driven by economic incentives. Such research could guide regulator efforts to collect data and set policies to limit possible instabilities associated with interconnectedness. At one level, this is not surprising: As we all know, models are abstractions; nonetheless, improving the conceptual toolkit with which we gauge interconnectedness along practical dimensions is clearly needed.<sup>18</sup>

### **Summary**

My current assessment of the risks to financial stability remains tentative and subject to change as we learn more or conditions shift. Policymakers and researchers need better models and data to understand the interconnections between the banking system and nonbank financial institutions. Indeed, one of the themes of this conference is data needs, and the focus on this issue is an important aspect of this conference.

History has demonstrated that risks evolve in response to regulatory pressure and the animal spirits that emerge as memories fade, as well as to animal spirits. As a result, the infrastructure needed to learn the things we don't know needs to be put in place. An essential element of that infrastructure is learning the lessons of history – both the lessons of what happened, and the fact that supervisors and regulators will on occasion be surprised. Learning those lessons is not as simple a task as it may sound. But it is certainly a far more important task than it sounds.

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<sup>18</sup> In a sense, this section has discussed what soon after the collapse of Lehman Brothers began to be called “macroprudential supervision”, by which at that stage was meant supervision that focused on the dynamics of the financial system that resulted from interactions among financial institutions, of which the worldwide impact of the Lehman failure was the outstanding example. Over the course of a few years, the term “macroprudential policies” began generally to be used as a description of sector-specific policy instruments that could be used to deal with potential instabilities in a particular sector, usually the housing sector.

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