

# MACROPRUDENTIAL POLICY AND FINANCIAL STABILITY:

# WHERE DO WE STAND?



BY CLAUDE LOPEZ WITH JONATHAN ADAMS-KANE,  
ELHAM SAEIDINEZHAD, AND JAKOB WILHELMUS



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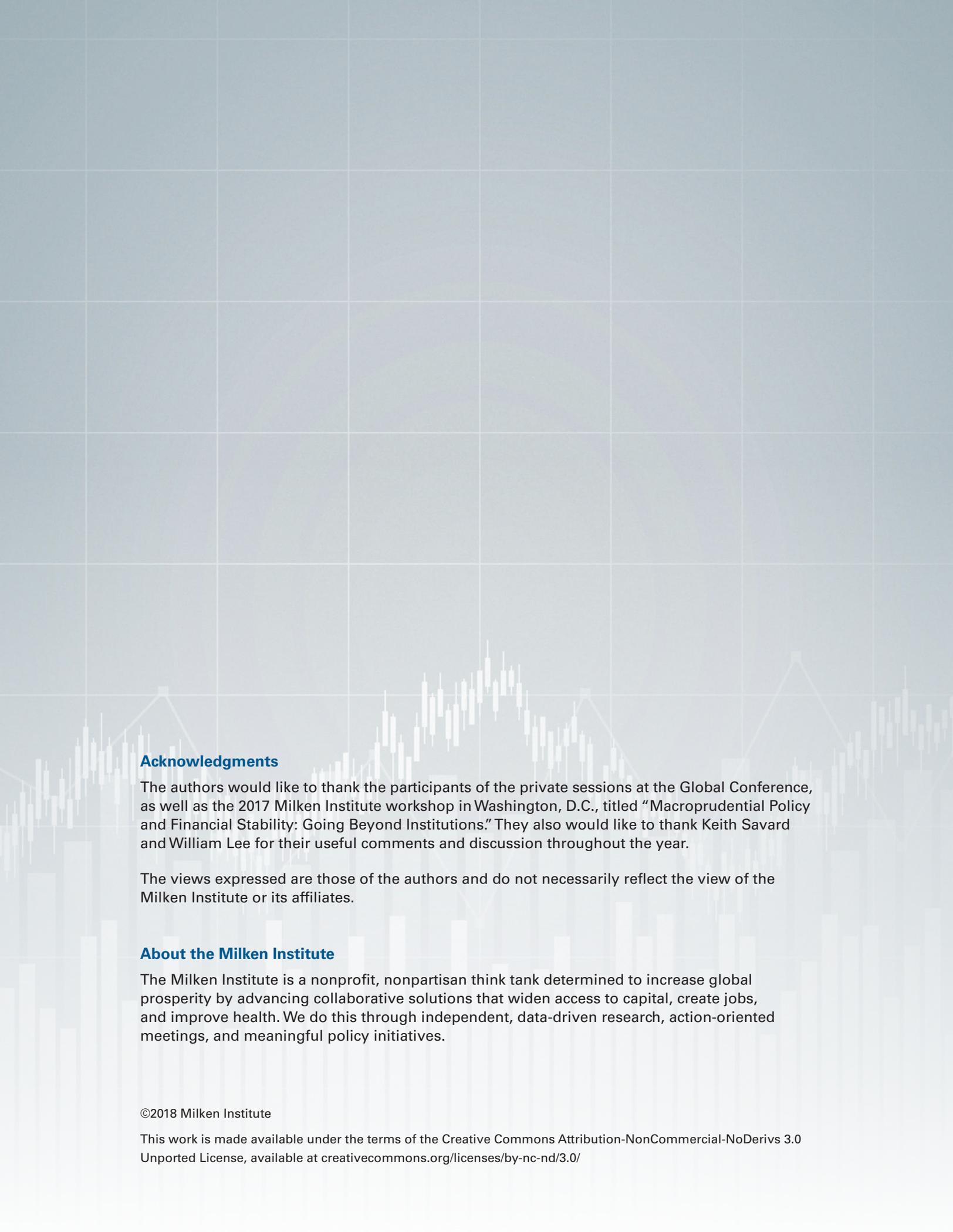
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The background of the page features a light blue grid pattern. Overlaid on the grid is a faint, stylized candlestick chart with white bars and thin lines, suggesting a financial or data-related theme.

## **Acknowledgments**

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The views expressed are those of the authors and do not necessarily reflect the view of the Milken Institute or its affiliates.

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The Milken Institute is a nonprofit, nonpartisan think tank determined to increase global prosperity by advancing collaborative solutions that widen access to capital, create jobs, and improve health. We do this through independent, data-driven research, action-oriented meetings, and meaningful policy initiatives.

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# PREFACE

Changing political and social priorities since the 2016 presidential election have strengthened efforts to reshape parts of the post-crisis macroprudential framework and to write new rules according to the administration's "core principles." These include the fostering of U.S. economic growth, the prevention of taxpayer-funded bailouts, streamlined regulations, and public accountability of federal regulatory agencies.

Basel III, Dodd-Frank, and other legislative and regulatory initiatives have significantly changed the financial ecosystem. Banks (and insurance companies) have been pressured to reduce their complexity, leverage, and riskier lines of business to decrease the chances of another financial crisis. Nonbank financial intermediaries have stepped in to fill the vacuum, and alternative financial instruments have helped to rearrange intermediation needs across different actors. Market-making activities are subject to new transparency requirements, ensuring that more financial products will be traded through exchanges, instead of over the counter. The evolving relationship between financial regulation and financial activity has also led to unanticipated consequences and reactions from market participants. From these, it is evident that further refinements to the Dodd-Frank Act, which includes the Volcker Rule, are necessary to ensure overall financial stability and not just stability within the regulatory perimeters.

In this rapidly changing environment, financial market research has become overly technical and often myopically focused on refining operational procedures while the political debate on financial reforms is increasingly polarized.

The Milken Institute works to facilitate a continuing dialogue among key stakeholders in this arena and to improve the established reforms, as well as those under proposal. Over the past year, the institute's international finance and macroeconomics team held roundtables and discussions with regulators and market participants. It also published nonpartisan and data-driven research to evaluate the efficacy of the intended effects of financial reforms and point out some of their unintended consequences.

Section I of this publication offers a synopsis of those discussions and summaries of five papers produced over the same period. Sections II, III, and IV comprise those papers, which highlight the impact of the current regulations, the influence of the asset management industry on financial stability, and how the strengthened role of central counterparty clearinghouses in the derivatives market affects the resilience of the financial system.

Looking forward, we will continue to evaluate policy changes and study the macro-financial linkages that influence behavior in the banking industry, capital markets, and corporate finance. We will evaluate potential changes in policies that can promote more productive cross-border capital flows and broader access to capital worldwide. Our overarching objective is to encourage policies that improve the functioning of the financial system while balancing the goals of improving financial stability and fostering economic growth.



Claude Lopez, Ph.D.  
Director of International Finance and Macroeconomics Research  
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# MACROPRUDENTIAL POLICY AND FINANCIAL STABILITY: WHERE DO WE STAND?

CLAUDE LOPEZ | MARCH 2018

## The State of Current Regulations for Financial Stability

*Practitioners and regulators in our 2017 roundtables agreed that the banking system is safer since 2010, with higher bank capital levels, for example, and limits to the scope of bank activities. But can the same be said regarding the overall financial system?*

The Dodd-Frank Act (DFA) of 2010 is the most far-reaching financial regulatory reform legislation signed into U.S. law since the Great Depression. In the wake of the 2008 banking collapse and ensuing financial crisis, DFA reforms aimed to separate proprietary trading from the business of banking, via the Volcker Rule, and to reinforce supervisory and regulatory oversight of systemically important financial institutions, markets, and activities, through the creation of a Financial Stability Oversight Council (FSOC). More than seven years later, however, and despite provisions to strengthen bank balance sheets and limit high-risk activities, DFA implementation has fallen short of achieving its main objectives: to prevent taxpayer bailouts and streamline oversight of the U.S. financial system. And since the 2016 presidential election, the future remains uncertain for the Volcker Rule, the FSOC, and other elements of the law.

Most financial market participants we interacted with agreed that the U.S. regulatory structure remains fragmented, and cumbersome. One of the responsibilities of the FSOC is to coordinate policies and improve information sharing across independent federal and state agencies in order to alleviate confusion arising from overlapping authorities and mandates. To date, the FSOC has focused mainly on three areas: determining what institutions to designate as systemically important financial institutions (SIFIs); gathering more financial data; and sponsoring research to help understand and identify systemically risky behavior. These are important and necessary areas of focus, but they have done little to promote the immediate need to define, reshape, and strengthen the regulatory and supervisory reach.

The U.S. Treasury has echoed these concerns, particularly in two of its reports, “Banks and Credit Unions” (June 2017) and “Capital Markets” (October 2017), released as blueprints for “A Financial System That Creates Economic Opportunities.”<sup>1</sup> During the institute’s workshop in D.C., both practitioners and regulators were supportive of the administration’s general roadmap for regulatory changes, especially as it pertains to the following issues related to financial stability:

- ▶ **Governance and accountability over the regulatory structure:** Failure in regulatory oversight played a key part in the financial crisis, and the creation of the FSOC in 2010 was an attempt to avert another catastrophe. To be effective, roundtable participants agreed, the FSOC should have the authority to assign a primary regulator who can step in when multiple agencies may have jurisdiction over a given issue.
- ▶ **Regulatory/supervisory scrutiny relative to bank complexity and size:** Regulators should consider: (a) raising the thresholds for size and activity subjecting a bank to mandated stress tests; (b) applying prudential standards and redesigning living wills to reflect more accurately the different categories of banks; (c) increasing transparency to the

1. The two reports, published in June and October 2017, are part of a series of four appearing under the rubric “A Financial System That Creates Economic Opportunities,” by Steven T. Mnuchin and Craig S. Phillips, and allude to “Executive Order 13772 on Core Principles for Regulating the United States Financial System.” See: [www.treasury.gov/press-center/press-releases/Documents/A-Financial-System-Capital-Markets-FINAL-FINAL.pdf](http://www.treasury.gov/press-center/press-releases/Documents/A-Financial-System-Capital-Markets-FINAL-FINAL.pdf) and [www.treasury.gov/press-center/press-releases/Documents/A%20Financial%20System.pdf](http://www.treasury.gov/press-center/press-releases/Documents/A%20Financial%20System.pdf).

frameworks for stress tests and capital planning review; and (d) easing capital and liquidity requirements on smaller and less complex banks.

- ▶ **Transparency and accountability within the regulatory process:** Cost-benefit analyses should be factored into the rule-making process. Also, proposed alternative frameworks for stress tests and capital reviews of banks of differing scale and complexity should be opened up for public comment.
- ▶ **The Volcker Rule’s burden on smaller and well-capitalized banks:** Smaller institutions (those with \$10 billion or less in total consolidated assets) should be exempt from the Volcker Rule, and well-capitalized banks with adequate risk-management procedures should have an “off-ramp” by which they would cease to be subject to the rule’s prohibitions on proprietary trading. (Of note, in December 2016, and after three previous extensions, the Federal Reserve granted what it said would be a final extension, of up to five years, to a number of the largest banks to comply with the ban on proprietary trading.) It would also be prudent to simplify the required documentation for banks engaged in “market-making” activities and not involved in “proprietary trading.”

It is worth noting that several Treasury proposals are in line with recent recommendations, including those of the Federal Reserve and in the Financial Choice Act.

The 2017 Treasury reports proposed an ambitious agenda of supervisory and regulatory rollbacks and loosening, but roundtable participants noted that important issues remain unresolved:

- ▶ **Regulation versus legislation:** Many Treasury recommendations could be implemented through the administrative process, rather than through legislation, but participants warned against this. While administrative rule changes would likely occur swiftly (assuming the allocation of sufficient resources), a future administration could reverse them. Thus, change by administrative fiat could increase regulatory uncertainty, rather than decrease it.
- ▶ **Unexpected consequences of the current framework:** The dynamic relationship between financial regulation and financial activity has led to unanticipated market reactions. Hence, any changes to the current framework require a better understanding of their consequences.

The three papers in Section II address some key aspects of these last two points. In “Financial Deregulation: Repeal or Adjust” (February 2017), we address some of the regulatory changes we had expected in early 2017; most of them turned out to be consistent with those in the Treasury reports that were released later in the year.

The second and third papers focus on some of the unexpected consequences of implemented reforms. “The Real Story Behind the Surge in FHLB Advances” (September 2017) illustrates how regulatory policy prompted banks to shift their short-term borrowing to Federal Home Loan Banks. This made banks safer, but increased FHLBs’ vulnerability to a liquidity shock and made them a potential stress point in the financial system. “Beyond Unintended Consequences: Changes to Foreign Branch Behavior Illustrate Overlooked System-Wide Regulatory Effects” (November 2017) details how the effects of different U.S. regulations led to changes in the way foreign banks do business.

## The Asset Management Industry and Financial Stability

Roundtable discussions covered the topic of extending Dodd-Frank rules—including those for stress tests and capital ratios—to asset managers, and participants warned that bank regulators, not market regulators, had played a prominent role in macroprudential rule and policy development, especially at the international level. While the discussions for setting the appropriate regulatory perimeter may have moved away from institution-centric characteristics to one that is based on specific activities that may bear on financial stability, financial market practitioners remain concerned about the inappropriate use of bank criteria to regulate or supervise asset managers; theoretically, their risk profiles differ.

In the post-crisis world, the center of power in finance is shifting away from banks. As assets under management approach \$100 trillion by 2020, the buy side is poised to replace banks as the major source of funding for deals and underwriting. So it is no surprise that the asset management industry, which allocates vast sums across a broad set of financial assets using sophisticated strategies and financial instruments, would also raise red flags for regulators. Refinements in debt structures and investment vehicles pose a continual challenge for them as they try to stay abreast of innovations; some likely designed, in fact, in direct response to regulatory impositions. Monitoring and gauging the appropriate degree of supervision and regulation has become more challenging. Yet, both market participants and regulators agreed that policies going forward must focus on monitoring functionally equivalent activities across firms and sectors, rather than regulating the activities of individual firms or sectors.

It is understandable that the authorities' first objective is to gather data and information to better understand the increasing range of activities that engage asset managers. However, there is a growing movement among some supervisors and regulators to extend industry-wide stress-testing and other assessment tools for evaluating adequate liquidity and excessive leverage to asset managers and other financial entities. But market participants at the roundtables noted again that these tools are designed for the banking system, and that systemic risk in asset management is much more difficult to define. They highlighted some of their concerns about extending assessments to asset managers:

- ▶ **Failure is not an option for large banks:** The key difference between asset management firms and banks lies in the consequences that result from their “options” for failure. For most investment vehicles the instrument’s failure to perform may cause a revaluation of wealth, but that failure doesn’t usually raise systemic risk. Indeed, with some investment vehicles (e.g., swaps), there may be a wealth transfer, but no net aggregate wealth destruction. In contrast, the failure of a systemically important bank may lead to runs and mass withdrawals from the banking system that would transmit the shock across the entire economy. Such an all-encompassing effect highlights one key characteristic that makes banks systemic: they play a critical (and irreplaceable) role in the payments system which connects to all parts of the “real” economy.<sup>2</sup>
- ▶ **Market-based prudential regulation and information sharing:** Market-based regulation built on disclosure requirements mutually agreed-upon by all market participants, rather than prudential regulations arbitrarily imposed, could provide better and more effective protection against systemic risk. Furthermore, both regulators and investors at the roundtables emphasized the importance of increasing the transparency of underlying portfolios and their potential reallocation in the face of certain market shocks. While much has been done by many asset managers to increase portfolio transparency, there are still certain sectors of the asset management space, e.g., hedge funds or family offices, where very little information is available.

2. For some supervisors and regulators, asset management firms may also influence systemic behavior by creating and distributing financial products that incentivize asset owners to react in similar manners to surprising changes (e.g., financial products linked to instruments that would be prone to “runs” –large waves of buying or selling—in the event of changes in market liquidity). This remains a topic of active discussion and research among financial practitioners and the official sector.

- ▶ **Industry insights and engagement with practitioners are critical:** A case in point, brought up at the D.C. roundtable, was a liquidity risk-management rule proposed by the SEC in 2015 that suggested, among other things, a 15 percent limit on illiquid assets for mutual funds and ETFs. While intended to ensure prudent management, the liquidation of the Third Avenue high-yield fund later that year showed that the rule would have prevented other actors from stepping in with financial support and stabilizing the market. In other words, the rule would have created the problem it was designed to prevent.

The fourth paper of this report, “The Asset Management Industry, Systemic Risk, and Macroprudential Policy” (April 2017) examines the challenge of profiling risk in the asset manager industry. (Of note, in October 2017 the Treasury Department released its third report in the series “A Financial System That Creates Economic Opportunities,” this one addressing asset management and insurance. The ideas reported above are in line with the part on asset management.)<sup>3</sup>

## Resilience of Financial Market Infrastructures/Clearinghouses

*It is not just a matter of getting failed central counterparty clearinghouses (CCPs) wound down or back on their feet. As hubs of the overall system, CCPs are the best place for regulators to ensure that risk transfer markets are functioning.*

Financial market infrastructures (FMIs), including central counterparty clearinghouses, lie at the core of well-functioning money and capital markets because they ensure finality in clearing and settling payments. The U.S. FMI landscape is highly interconnected and interdependent; all FMIs directly or indirectly depend on the Fedwire Funds Service to settle large-value interbank payments, such as the settlement of government and corporate securities transactions. Almost all systemically important CCPs are linked to other CCPs through cross-margining arrangements.<sup>4</sup> Consequently, FMIs can be sources of systemic vulnerability in the face of financial shocks, such as liquidity dislocations and credit losses, or may be a conduit through which these shocks are transmitted across domestic and international financial markets.

Dodd-Frank improvements to FMIs have focused on developing international standards to strengthen the supervisory frameworks for systemically important financial market infrastructures and utilities (SIFMIs and SIFMUs). Together with the 2012 Bank for International Settlements’ Principles for Financial Market Infrastructures, they provide a new cooperative supervisory framework for some designated financial market utilities. Furthermore, the growing role of CCPs in derivative trading has led to more stringent international risk-management standards for them, especially with respect to the recovery/resolution process. While improving the resilience of CCPs has received much of the attention in the design of a framework for FMIs, practitioners and regulators at roundtable discussions highlighted key points that had not been addressed:

- ▶ **Regulatory overlap:** In July 2012, the FSOC designated eight of the largest U.S. CCPs as SIFMUs. Yet supervisory arrangements often mean that several agencies have jurisdiction over them, making coordination and cooperation complicated but essential. For example, the Commodity Futures Trading Commission (CFTC), the SEC, and the Federal Reserve Board all have specific responsibilities over CCPs, depending in part on a CCP’s activities (i.e., the products it clears) and on whether it has been designated as systemically important.

3. “A Financial System That Creates Economic Opportunities: Asset Management and Insurance,” by Steven T. Mnuchin and Craig S. Phillips, and allude to “Executive Order 13772 on Core Principles for Regulating the United States Financial System.”

4. A cross-margining arrangement is an agreement among CCPs to consider positions and supporting collateral in their respective organizations as a common portfolio for participants that are members of two or more of the CCPs. This reduces collateral requirements for clearing participants and helps to improve their liquidity and capital efficiencies.

- ▶ **Resilience and stress testing:** Much of the attention surrounding the FMI regulatory framework design has targeted improving CCP resilience, but other challenges remain, including low disclosure standards and lack of standardized stress tests across institutions. These issues hinder effective regulatory monitoring.
- ▶ **CCPs' resolution/recovery phase and financial stability:** The CCP resolution phase will most likely not result from failures of risk management at the CCP level, but from a major shock to the financial system, affecting all clearing members. Hence, the CCP resolution phase is a place where regulators can be involved in either managing the CCP resolution itself or in providing liquidity to banks. In the latter case, the CCP is the best place to monitor if the banks are fulfilling their obligations to their counterparties. Of course, this reasoning relies on the clear leadership of a competent authority able to make swift and timely decisions. Then, the resolution phase becomes the best place to make sure the risk transfer markets function.
- ▶ **Strong reliance on banks:** FMI members are mostly banks that are also the main liquidity providers for the rest of the financial system. The failure of one member would cause distress across most, if not all others. Since these banks tend to have membership in multiple FMIs, that dependency intensifies.

The fifth paper, “Central Counterparties Help But Do Not Assure Financial Stability” (July 2017), provides insights on how CCPs may protect some parts of the financial system but may not necessarily increase overall financial stability.



## SECTION II

Overview of the State of  
Current Regulations for  
Financial Stability



# FINANCIAL DEREGULATION: REPEAL OR ADJUST?

CLAUDE LOPEZ AND ELHAM SAEIDINEZHAD | FEBRUARY 2017

While a major overhaul of U.S. financial regulation may be unlikely during the early months of the Trump administration, changes should be expected as his nominees to lead the Treasury Department and financial regulatory agencies are confirmed. This will be the biggest turnover in regulatory leadership since the passage in 2010 of the Dodd-Frank Act, and it may also prove to be a test for Basel III, the macroprudential policy framework created by the G20 countries in response to the 2007-2008 financial crisis. Dodd-Frank, which has never been fully implemented, is the legislative vehicle for U.S. integration of Basel III recommendations.<sup>5</sup> The act aims to limit systemic risk, allow for the safe resolution of the largest intermediaries, increase scrutiny of risky nonbanks, and reform derivatives trading. The Financial Choice Act, introduced in the U.S. House of Representatives last year as an alternative to Dodd-Frank, proposes significant changes in financial regulation. Although it is unlikely that the Financial Choice Act will pass, it is considered by many to be the blueprint for the regulatory revisions to come.<sup>6</sup>

There may be uncertainty about what will be changed and when, but there is no doubt that turnover will occur among senior staff at regulatory agencies. In addition to President Trump's appointments to lead the Treasury Department, the Securities and Exchange Commission (SEC), and the Commodities Futures Trading Commission (CFTC), the administration is expected to follow tradition and nominate new heads of the banking authorities, namely for the Office of the Comptroller of the Currency (OCC), the Federal Deposit Insurance Corp. (FDIC), and the Federal Reserve Board of Governors, all within the next 18 months. More specifically, three new commissioners, the maximum allowed from any one political party, will be nominated for both the SEC and the CFTC. The terms for current leadership of the OCC, the FDIC, and the Federal Reserve expire, respectively, in April 2017, November 2017, and February 2018. The key position of vice chairman for supervision also is vacant at the Fed.<sup>7</sup> (The directors of the OCC and the Consumer Financial Protection Bureau (CFPB) serve on the FDIC's board.<sup>8</sup>)

Figure 1 provides an overview of the U.S. financial regulatory structure. It shows that these changes will affect the entire financial sector, including banks, insurance companies, financial market utilities (FMUs), and the securities markets. Furthermore, seven of the 10 voting members of the Financial Stability Oversight Council (FSOC), which coordinates U.S. macroprudential policy, will be replaced.

These new regulators will have substantial authority, both as individual agency chiefs and as members of the FSOC, to change the way Dodd-Frank is applied. They can do so without going through Congress or even adjusting their own formal rule-making processes. For example, agency chiefs can change enforcement priorities by "amending or rescinding and replacing related guidance, such as interpretations of rules, internal policies, and manuals." Unlike the repeal of Dodd-Frank or a rule change, a new direction in guidance and interpretation can be ordered and implemented almost immediately.

5. See "Dodd-Frank: Washington, We Have a Problem" 2016 by Claude Lopez and Elham Saeidinezhad (2016). [www.milkeninstitute.org/publications/view/812](http://www.milkeninstitute.org/publications/view/812).

6. The regulatory easing concerns only part of the regulatory framework. No change in stance is expected regarding the anti-money laundering (AML) regulations.

7. The term of the vice chairman of the Federal Reserve Board ends in June 2018.

8. The CFPB director's term expires in July 2018.

FIGURE 1

## OVERVIEW OF THE U.S. FINANCIAL REGULATORY STRUCTURE

Sector	Corresponding Regulators			
Depository Institutions (Domestic and Foreign)	FRB	OCC	FDIC	State Banking Supervisors
Payment System and Other FMUs	FRB	SEC	CFTC	
Consumer Protection Issues	CFPB	FRB	FDIC	
Insurance Products	An Insurance Expert Appointed by the President	A State Insurance Regulator	FIO	
Securities and Bond Products	SEC	A State Securities Commissioner		
Securities-Based Swaps	SEC			
Non-Securities-Based Swaps	CFTC			
Government-Sponsored Enterprises	FHFA			
Credit Unions	NCUA			

**FSOC Voting Members**

- U.S. Treasury (Chairperson)
- CFPB: Consumer Financial Protection Bureau
- CFTC: Commodities Futures Trading Commission
- FDIC: Federal Deposit Insurance Corporation
- FHFA: Federal Housing Finance Agency
- FRB: Federal Reserve Board
- NCUA: National Credit Union Administration
- OCC: Office of the Comptroller of the Currency
- SEC: Securities and Exchange Commission
- Insurance expert

**FSOC Non-Voting Members**

- FIO: Federal Insurance Office
- A state insurance regulator
- A state banking supervisor
- A state securities commissioner

Source: Milken Institute.

In light of the leadership overhaul at the regulatory agencies, the blueprint defined by the Financial Choice Act, and the softer, post-election tone regarding Dodd-Frank revamping, the incoming administration may first focus on changes that would provide regulatory relief to the financial sector without altering the formal rules. In that context, the following are potential targets for early change:

- ▶ **The Financial Stability Oversight Council:** The FSOC's authority to designate systemically important nonbank institutions (FMUs, including clearing organizations and payment systems, and nonbank financial companies) has been criticized and challenged, most notably in the FSOC's rescission of GE Capital's designation as systemically important in 2016. New voting FSOC members may simply choose not to designate new systemically important financial institutions (SIFIs) and reverse existing designations. As a result, nonbank companies would no longer be subject to enhanced Fed supervision. The FSOC may also shift its attention away from asset managers to focus on streamlining regulations across agencies instead of creating new regulations.
- ▶ **Securities regulations:** The SEC and the CFTC are likely to limit the scope of future securities regulations. This includes current efforts to regulate high-frequency trading and security-based swaps. Furthermore, the issuance of fiduciary rules for financial advisers and rules for asset manager stress testing will not remain a priority for the SEC.<sup>9</sup> Both agencies may emphasize penalties against individuals rather than against corporations in an effort to hold individuals accountable. The result would be more civil and criminal prosecutions for fraud and self-dealing.

9. The Department of Labor's fiduciary duty rule will likely survive but may encounter significant delay in its implementation.

- ▶ **The FDIC's orderly liquidation authority:** The FDIC is currently the orderly liquidation authority under Title II of Dodd-Frank and, as such, it can theoretically liquidate a SIFI in difficulty outside of the normal bankruptcy code. However, the FDIC can act only after the Secretary of the Treasury decides to place the SIFI under FDIC receivership. This procedure has never been used, and it seems rather unlikely that it will be under the new administration. The potential amendment of the federal bankruptcy code to facilitate procedures for SIFIs is directly related to this point.
- ▶ **Smaller and regional banks:** Some banking organizations may benefit from an increase in Dodd-Frank's \$50 billion asset threshold that designates them as SIFIs, subject to higher supervision standards.<sup>10</sup> The Fed proposed in September 2016 to exempt the capital plans of smaller banks from scrutiny under Comprehensive Capital Analysis and Review (CCAR) stress testing and resolution planning. The threshold increase has bipartisan support; however, it would have only a limited impact because banking agencies have already eased regulatory pressure for banks with less than \$100 billion in assets.

Similar easing seems unlikely for the largest banks in the short term, but they may benefit from changes or further delays in the implementation of the Volcker Rule's limits on proprietary trading. Concerns regarding the rule's complexity, as well as its impact on market liquidity, are widespread, which may explain the recurring postponement of its full implementation. The new deadline for conformance is July 2017.

- ▶ **The Consumer Financial Protection Bureau:** The CFPB's leadership structure has often been called into question, especially since November 2016, when a federal court ruled it unconstitutional because its single director can be removed only "for cause" during his five-year term. Changes will be likely if the CFPB's appeal fails.

To sum up, more than six years after the advent of Dodd-Frank, many are calling for a reassessment to ease the burden it places on financial-services companies, especially banks. The softened rhetoric of the new administration is quite different from the aggressive calls for repeal that were common during the campaign, and suggests a more subtle approach to regulatory change. This new tack also is more in line with the broader international debate. The pressure for regulatory change is not confined to the U.S. The latest delays in the finalization of Basel III's banking rules show that the post-crisis regulatory framework itself is under scrutiny.<sup>11</sup>

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10. A Banking Organization is defined to include (1) insured depository institutions; (2) bank holding and savings and loan companies; and (3) all companies that are treated as bank holding companies under the International Banking Act.

11. The Group of Central Bank Governors and Heads of Supervision (GHOS), the oversight body of the Basel Committee on Banking Supervision, postponed a Jan. 8, 2017, meeting due to disagreement over new capital requirements for lenders.

# THE REAL STORY BEHIND THE SURGE IN FHLB ADVANCES: MACROPRUDENTIAL POLICY CHANGED HOW BANKS BORROW

JONATHON ADAMS-KANE AND JAKOB WILHELMUS | SEPTEMBER 2017

## Key Observations

- Banks have doubled their borrowings from Federal Home Loan Banks (FHLBs) in the past five years. FHLBs are now the source for roughly one-quarter of all bank non-deposit liabilities.
- New rules for money market funds (MMFs) implemented in 2016 caused a massive reallocation of investor funds from prime to government MMFs. This change caused banks to borrow more from FHLBs for two reasons: (1) With fewer investors, prime MMFs were no longer a large buyer of bank commercial paper; and (2) FHLBs could lend to banks at attractive interest rates because the surge of money into government MMFs increased demand for debt securities issued by FHLBs.
- The new rules for MMFs reinforced an ongoing rise in bank demand for FHLB advances, which was driven by the phasing in of more stringent regulatory liquidity requirements for large banks.
- The increase in banks' FHLB borrowing is part of a broader transition to be less reliant on short-term (non-deposit) sources of financing. This change in funding structure has made the banking system safer. However, FHLBs now incur more refinancing risk (i.e., the risk that they will have difficulty rolling over their maturing short-term obligations when market conditions change). Ultimately, any risk faced by FHLBs is borne by taxpayers.

## Introduction

In the wake of the 2008 global financial crisis and ensuing regulatory reforms, U.S. banks dramatically altered their sources of funding. Funding from non-deposit sources now accounts for only 13 percent of bank liabilities, compared with more than 30 percent 10 years ago. However, bank funding from FHLBs has not followed suit. As government-sponsored enterprises (GSEs) charged with supporting housing and community investments, FHLBs are financed mainly by issuing notes and bonds implicitly guaranteed by the U.S. Government. Financial institutions (e.g., savings and loans and commercial banks) that are members of the FHLB system are eligible for FHLB loans ("advances").<sup>12</sup> Although FHLB advances to banks fell for a time following the crisis, they began to rise rapidly beginning in 2012, roughly doubling in the five years leading up to 2017.

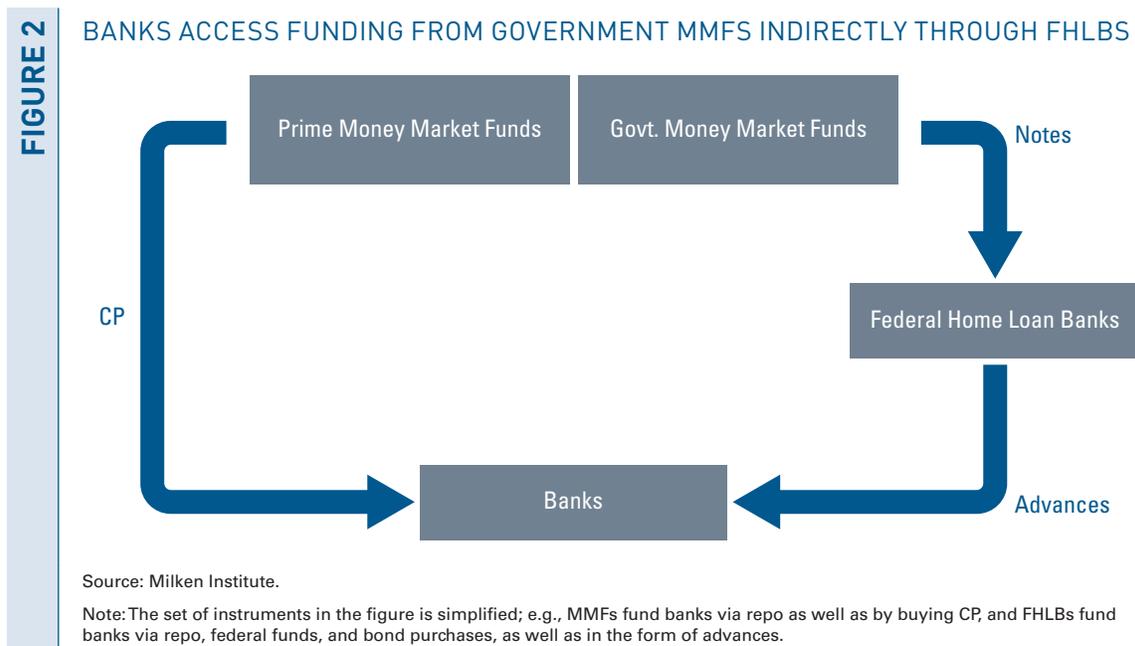
Money market fund reforms designed to strengthen financial stability may have unintentionally exposed taxpayers to potential banking system losses. The reforms have allowed large banks to obtain safer funding with advances from FHLBs instead of relying on other non-deposit instruments such as repurchase agreements. However, taxpayers could be required to bail out FHLBs in the event of a liquidity crisis.

12. Advances are secured loans and can come in a wide range of maturities, from overnight to 30 years; most have maturities of less than two years. Advances can have fixed or variable interest rates, as well as a range of payment characteristics and optionality. FHLBs also provide funds via the federal funds (where, as a group, they are by far the largest lender); repo; and capital markets. As of the second quarter of 2017, the FHLB system's \$1.08 trillion of total consolidated assets included roughly \$707 billion of advances, \$186 billion of investment securities, \$75 billion of federal funds sold, and \$48 billion of reverse repo (FHLB Office of Finance Combined Financial Report). Roughly 70 percent of advances go to commercial banks. (Our estimates of FHLB advances to commercial banks, here and throughout the article, are based on FDIC call reports.)

In the remainder of this paper, we show that the use of FHLB advances accelerated following regulatory changes to money market funds. These regulatory changes lowered the cost of FHLB advances, and also had the effect of shortening the maturity of FHLBs' obligations to satisfy the needs of MMFs. We conclude with some policy considerations.

## New Rules for MMFs Are Pushing Banks to Borrow from FHLBs

New regulations implemented in 2016 to bolster institutional money market funds also changed the way that banks access funding (Wilhelmus and Adams-Kane 2017). The new rules require institutional prime funds to float their net asset value (NAV) and impose redemption gates and fees. This caused businesses seeking to maintain the certainty of a given price for their MMF shares to reallocate roughly \$1 trillion from prime to government funds. The reallocation reduced prime MMFs' demand for commercial paper (CP), a traditional source of non-deposit short-term financing for banks.<sup>13</sup> CP was an asset held by prime funds but not allowed for government funds. Moreover, FHLBs' obligations qualify as agency debt and can be held by government funds. The sudden growth of government funds stimulated demand for agency debt and thereby lowered the cost of funds for FHLBs. This allowed FHLBs to earn income by lending to banks at a relatively low cost. Thus, FHLBs have increased their issuance of obligations and their advances to banks, and as shown in Figure 2, this has substituted for banks' direct issuance of CP.



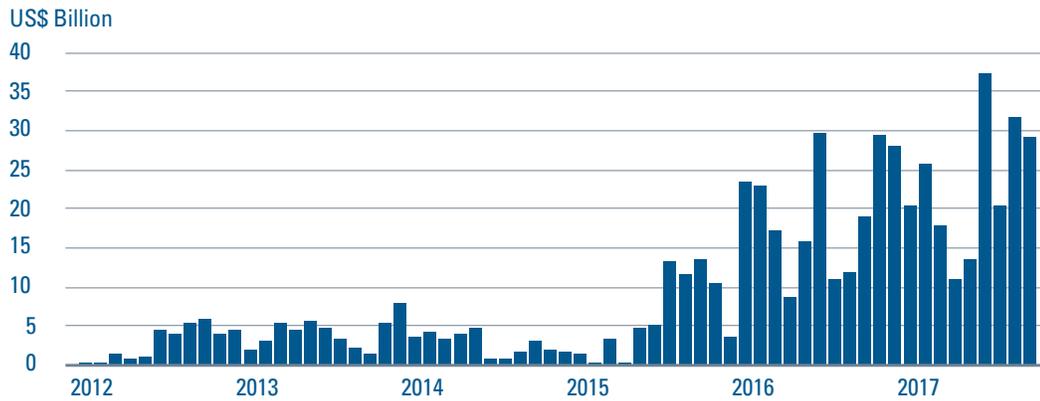
As banks shifted from raising funds from issuing CP to borrowing from FHLBs, FHLBs changed the composition of their liabilities: They began to issue significantly more short-term floating rate notes (see Figure 3). That is because floating rate notes are particularly well suited to MMFs. Outstanding short-term floaters increased from \$80 billion (8.9 percent of total FHLB notes and bonds) at the end of 2015 to \$256 billion (25.9 percent of total FHLB notes and bonds) at the end of 2016.<sup>14</sup>

13. Banks are generally prohibited from issuing CP themselves but can raise funds through asset-backed CP issued by conduits, or financial CP issued by bank-related finance companies held by the parent bank holding company (Kacperczyk and Schnabl, 2010).

14. As of August 2017, FHLBs' outstanding short-term floaters stood at \$297 billion (29.2 percent of total notes and bonds).

FIGURE 3

FHLBS' MONTHLY ISSUANCE OF SHORT-TERM FLOATERS INCREASED SIGNIFICANTLY IN 2016-2017



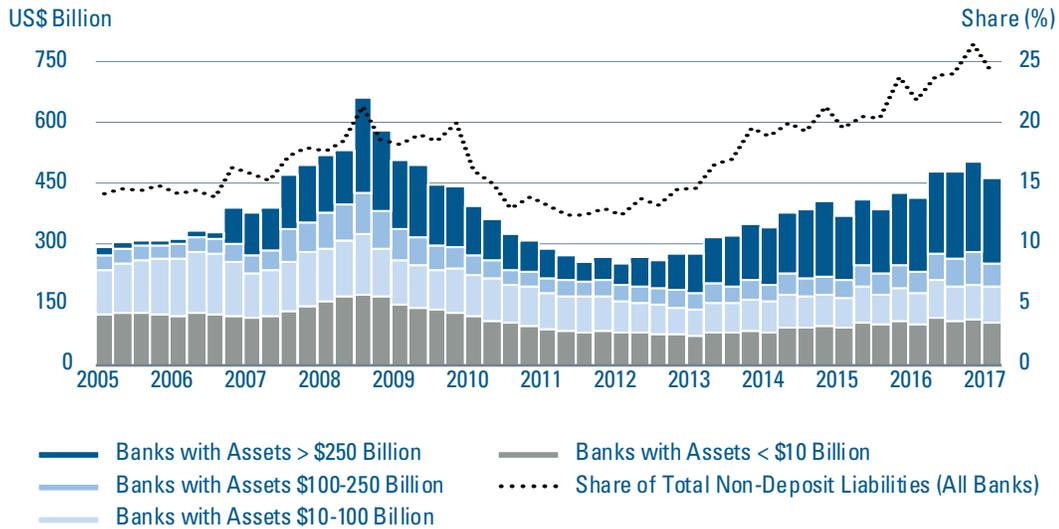
Source: FHLB Office of Finance Monthly Issuance Data Reports (January 2012-August 2017).  
 Note: Here, "short-term" signifies 397 days or less to maturity.

Advances and Bank Size

Most of the increase in FHLB advances over the past five years can be explained by the rise in demand for them among large banks, defined here as the 10 U.S.-chartered commercial banks with assets over \$250 billion, as shown in Figure 4. As a group, large banks quadrupled their FHLB borrowings between the first quarters of 2012 and 2017, both in absolute terms (from \$53 billion to \$211 billion) and as a share of non-deposit liabilities (from 4.3 percent to 17.3 percent).

FIGURE 4

LARGE BANKS LED A RESURGENCE OF FHLB ADVANCES



Source: Milken Institute calculations based on FDIC call reports and FHLB Office of Finance Combined Financial Reports (2005 through first quarter of 2017).  
 Note: Size classification is based on a given bank's maximum total assets from 1976 through the first quarter of 2017, so it is fixed over time.

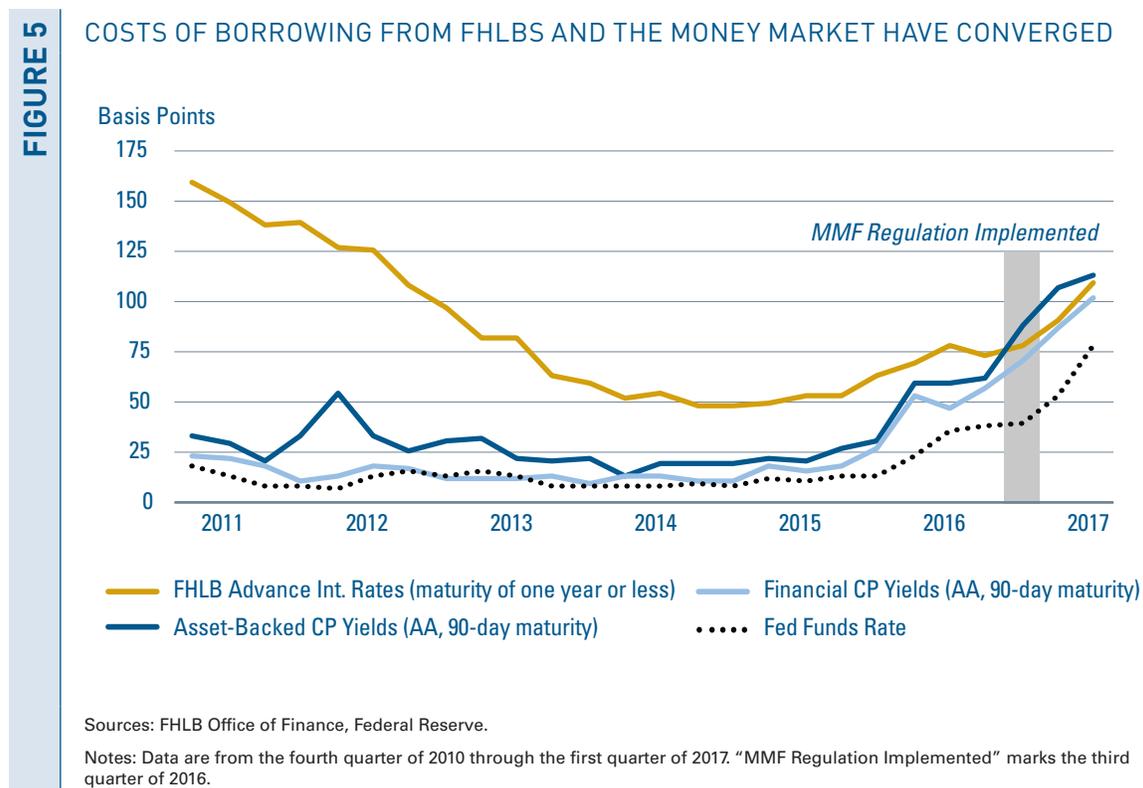
In the past, large banks—with greater access to financing from the capital and money markets—used FHLB advances significantly less than the rest of the banking sector. For example, in early 2012, large banks' outstanding FHLB advances accounted for only 0.8 percent of their total

liabilities. In comparison, for all other banks as a group, FHLB advances accounted for 3.8 percent. Now the gap has narrowed. For the first quarter of 2017, advances to large banks accounted for 2.7 percent of their total liabilities, compared with 4.0 percent for the other banks.<sup>15</sup>

The relationship between bank size and FHLB advances over this five-year period had two distinct phases. From 2012 through 2014, total FHLB advances to banks grew substantially, and large banks accounted for almost all of the growth. The adjustment of large banks to stringent new liquidity requirements was the main driver of this first phase of the surge (discussed in the following subsection). After slowing in 2015, the surge resumed in 2016—this time spurred by the regulatory shake-up of the MMF industry. Unlike in the previous phase, both medium-sized and large banks drove the growth of advances during the latter period.

## Why Banks Increased Their Borrowing from FHLBs

As noted above, the implementation of new rules for MMFs, which mandated floating NAV and gates and fees on redemptions, was the main driver of the acceleration of FHLB advances in mid- to late 2016. Total advances to banks rose by \$88 billion, a 21 percent increase, from March to December 2016, and, as noted, this increase in advances was split between medium-sized and large banks.<sup>16</sup> This relatively broad-based growth in advances is what one might expect given the twofold mechanism by which the new rules for MMFs affected bank behavior: First, the reforms depressed the market for CP, a common source of financing for medium-sized as well as large banks. Second, they stimulated demand for FHLB obligations, so FHLBs could raise financing more cheaply and then lend to banks—irrespective of size—at attractive interest rates (see Figure 5).<sup>17</sup>



15. This is partly accounted for by an increase in the number of large banks that borrow at all from FHLBs. In 2012, four of the 10 large banks had outstanding advances from FHLBs. By 2017, seven of the 10 did.
16. From the first quarter to the fourth quarter of 2016, outstanding FHLB advances to banks with assets below \$10 billion increased by roughly \$10 billion (a 10 percent increase); those to banks with assets in the \$10–\$100 billion range increased by \$12 billion (16 percent); those to banks with assets in the \$100–\$250 billion range increased by \$24 billion (43 percent); and advances to large banks increased by \$42 billion (23 percent).
17. Section 7(j) of the Federal Home Loan Bank Act of 1932 (12 U.S.C. § 1427(j)) requires the directors of FHLBs to extend advances “without discrimination in favor or against any member.”

FHLB advances also can accommodate bank demand for high-quality liquid assets (HQLA) to meet regulatory liquidity requirements. FHLB advances are typically backed by mortgages as collateral, so any HQLA purchased can remain “unencumbered” (i.e., not tied up as collateral), thus counting in the liquidity coverage ratio (LCR). Advances also are a closer maturity match for typical holding periods of HQLA, as they are generally longer-maturity than alternatives such as repo and federal funds. Thus, they can enhance the liabilities side of the balance sheet to meet liquidity requirements, as well as the assets side. The Federal Housing Finance Agency (FHFA) identified new liquidity requirements under the Basel III framework as the key factor behind the resurgence of FHLB advances to large banks that began in 2012.<sup>18</sup>

The surge in FHLB advances from 2012 through 2014 corresponds well with the timing of the rollout of more stringent (Dodd-Frank) liquidity requirements for large banks.<sup>19</sup> In late 2012, internal stress tests focused on liquid assets began for the largest banks, although comprehensive liquidity rules had not yet been finalized (Nasiripour 2012). A more exact proposal was made in late 2013; the final rules were released in September 2014 and came into effect at the beginning of 2015 (Federal Register 2013, 2014). Banks above \$250 billion in assets are subject to the most stringent requirements.<sup>20</sup>

The underlying reasons for the 2012-2016 increase in FHLB advances are in stark contrast to the drivers of a surge in advances that occurred from 2006 to 2008. At that time, highly leveraged banks turned to FHLBs to replace other sources of short-term funding as they became scarcer and more costly. This has been described as the FHLBs playing a “lender of next-to-last resort” role (Ashcraft, Bech, and Frame 2010). During this period and into 2009, the large banks’ collective share of FHLB advances grew, but this is largely explained by increased mergers and acquisitions that produced much larger banks (including some acquisitions of thrifts that had borrowed heavily from FHLBs, notably Washington Mutual, and reorganizations within bank holding companies). The bulk of these acquired advances were wound down in 2010 and 2011, when U.S. banks were rapidly reducing their use of non-deposit funding in general.

## Conclusion

Although catalyzed by the unintended consequences of money market fund reforms, the recent growth of banks’ borrowing from FHLBs also was part of a broader transition to a funding structure less reliant on short-term non-deposit sources. The regulatory overhaul following the 2008 global financial crisis improved financial stability by making banks much less vulnerable to potential liquidity shocks than they were a decade ago. However, FHLBs now play a larger role in bank funding and have taken more of the maturity mismatch intrinsic to the function of the banking system onto their balance sheets. This development is of potential concern to policymakers, as recently expressed by Federal Reserve Vice Chairman Stanley Fischer (2017):

*“Of note, in part supported by increased demand from government-only money market funds, the FHLB system has increased its issuance of shorter-maturity liabilities, which are more attractive to money funds. ... As a result, the FHLBs face an increased need to roll over maturing liabilities and thus greater vulnerability should they encounter liquidity pressures.”*

The reduction in systemic risk in the banking system came at a price: Private financial intermediaries are now even more interconnected with GSEs—and dependent on their public

18. This determination was based on direct written statements from two of the four largest banks and interviews with FHLB and FHFA officials (Federal Housing Finance Agency Office of Inspector General, 2014). For more information on the Basel III regulatory framework for liquidity, see Basel Committee on Banking Supervision (2010, 2013).

19. New liquidity rules were proposed by the Federal Reserve in December 2011.

20. The most stringent form of the liquidity requirements also apply to banks with \$10 billion or more in total on-balance-sheet foreign exposure. Banks with assets between \$50 billion and \$250 billion (and less than \$10 billion in foreign exposure) have weaker requirements.

guarantees—than before the crisis. Potentially, taxpayers now bear more of the remaining risk in the financial system. The growth in the role of FHLBs in funding commercial banks is just one part of a broader private-public nexus that also includes the roles played by other GSEs (e.g., Fannie Mae, Freddie Mac, and Ginnie Mae) in the mortgage market. In addition, the Federal Reserve continues to play an important role as a bank regulator, supervisor, and lender of last resort. Shaped by the rapid regulatory response to the 2008 crisis, this complex web of interactions has the potential for generating many unintended and yet-to-be-understood consequences. Likewise, as policymakers shift to tweaking or dismantling financial regulations, they can expect the unexpected.

## References

- Ashcraft, Adam, Morten L. Bech, and W. Scott Frame. "The Federal Home Loan Bank System: The Lender of Next-to-Last Resort?" *Journal of Money, Credit and Banking* 42, No. 4 (2010): 551-583.
- Basel Committee on Banking Supervision. *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems*. Basel, Switzerland: Bank for International Settlements, December 2010.
- Basel Committee on Banking Supervision. *Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools*. Basel, Switzerland: Bank for International Settlements, January 2013.
- Federal Housing Finance Agency Office of Inspector General. *Recent Trends in Federal Home Loan Bank Advances to JPMorgan Chase and Other Large Banks* (FHFA OIG Evaluation Report EVL-2014-006). Washington, D.C.: Federal Housing Finance Agency, 2014.
- Federal Register 78, no. 230 (November 29, 2013): 71818-71868.
- Federal Register 79, no. 197 (October 10, 2014): 61440-61541.
- Fischer, Stanley. "An Assessment of Financial Stability in the United States." Remarks at the IMF Workshop on Financial Surveillance and Communication: Best Practices from Latin America, the Caribbean, and Advanced Economies, Washington, D.C., June 2017.
- Kacperczyk, Marcin and Philipp Schnabl. "When Safe Proved Risky: Commercial Paper During the Financial Crisis of 2007–2009." *Journal of Economic Perspectives* 24, No. 1 (2010): 29-50.
- Nasiripour, Shahien. "Fed Begins Stress Tests on Bank Liquidity." *Financial Times*, December 12, 2012.
- Wilhelmus, Jakob and Jonathon Adams-Kane. "Regulation Almost Destroyed Money Market Funds, but Cash Management Needs Kept Them Alive." *Milken Institute Viewpoints*, July 2017.

# BEYOND UNINTENDED CONSEQUENCES: CHANGES TO FOREIGN BRANCH BEHAVIOR ILLUSTRATE OVERLOOKED SYSTEM-WIDE REGULATORY EFFECTS

JAKOB WILHELMUS AND JONATHON ADAMS-KANE | NOVEMBER 2017

## Introduction

Analyzing policies that aim to preserve macrofinancial stability is challenging because of the many unintended consequences that arise from the highly complex and integrated connections among global banks and U.S. financial markets. A full assessment of the many policies implemented since the 2008 crisis is even more challenging because they were crafted in isolation and implemented with little coordination. A decade later, it is apparent that monetary policy and macroprudential regulations must advance beyond identifying and managing the unintended effects of individual policies to assessing their combined impact on behavior in financial markets and the accompanying induced changes to bank business models.

Multifaceted policy effects on U.S. financial markets and banks are compounded by a fragmented regulatory system composed of independent agencies, each charged with different (but sometimes overlapping) mandates, objectives, and policy priorities. For example, as a regulator the Federal Reserve is concerned with ensuring overall financial stability by regulating and supervising bank holding companies.<sup>21</sup> By comparison, the Federal Deposit Insurance Corporation (FDIC) protects deposits to maintain public confidence in the banking system, and the primary mission of the Securities and Exchange Commission (SEC) traditionally has been financial market investor protection. In addition, jurisdiction over certain entities and activities varies among regulators. Consequently, a given regulatory or policy change may achieve its designated objective while spilling over to other parts of the financial system and interacting with other regulations and policies.

This paper illustrates how the interaction of unconventional U.S. monetary policy by the Fed and regulatory changes by the FDIC and SEC changed the way foreign banks do business in the U.S.<sup>22</sup> These changes also had a significant impact on bank risk profiles. We focus on how these “foreign branches” responded to three key policy and regulatory changes: (1) the Fed’s introduction of interest on excess reserves (IOER) in 2008; (2) a widening of the FDIC assessment base in 2011 that increased the cost of deposit insurance; and (3) new rules for money market funds in 2016 that shifted funds out of institutional prime money market funds (MMFs) into government MMFs.<sup>23, 24</sup>

With the introduction of IOER, banks engaged in an arbitrage trade to take advantage of the spread in rates offered on excess reserves and the cost of wholesale funding. FDIC reforms in 2011 on the assessment of premiums for deposit insurance altered the spread further by giving foreign branches a significant advantage over their U.S. competitors. In addition, money market reform in late 2016 triggered a decline in available wholesale bank funding, which caused a

21. While bank holding companies are by far the largest group, the Federal Reserve regulates a multitude of financial institutions; see Federal Reserve System (2015).

22. This paper builds on two other analyses of spillover effects of a 2016 change in U.S. regulations of money market funds: Adams-Kane and Wilhelmus (2017) and Wilhelmus and Adams-Kane (2017).

23. Hereafter, the part of global banks’ prevailing business models conducted through their U.S. branches is referred to as foreign branches’ business models. As of the third quarter of 2017, foreign branches account for roughly 12 percent of the total assets of the U.S. banking system, down from a peak of nearly 15 percent in the first quarter of 2014. Statistics on foreign branches’ balance sheets, here and throughout the paper, are from the Federal Reserve.

24. The new rules for money market funds required institutional prime funds to float their net asset value and impose redemption gates and fees. For details of the rules, see Federal Register 79, no. 157 (August 14, 2014): 47735-47983. For an overview of the reallocation caused by the change in rules, see Wilhelmus and Adams-Kane (2017).

reduction in foreign banks' reserve holdings. Our key point is that while none of these policy and regulatory changes were aimed at influencing foreign bank behavior, they combined in unexpected ways to significantly alter the business models of these banks' branches in the U.S. and the international funding markets in which their home offices operated.

## The Compound Effects of Policy and Regulatory Changes

The introduction of IOER in 2008, part of the Federal Reserve's new monetary policy operating system, incentivized banks to hold more reserves, as long as their marginal cost of borrowing was less than the interest earned on excess reserves.<sup>25</sup> Foreign branches' reserve deposits at the Fed grew from roughly zero in August 2008 to \$240 billion (16 percent of their total assets) in December of that year.<sup>26</sup> The rise in reserves continued in 2009 as the Fed expanded its large-scale asset-purchase program that increased reserves throughout the banking system to foster economic recovery.

Holding reserves with the Fed became more attractive for foreign branches than for domestic banks in April 2011, when the FDIC expanded its base for assessing deposit insurance premiums. Under the new FDIC insurance assessment scheme, it became more costly to increase the balance sheet with borrowed funds.<sup>27</sup> By imposing higher costs on FDIC-insured banks' marginal asset acquisitions, foreign branches were provided with an advantage over their U.S. counterparts, which were more dependent on depositors seeking FDIC protection.<sup>28</sup> By attracting funding from their home offices—which did not require FDIC insurance—branches from these countries—where the central banks often paid negative interest rates—could earn higher returns than their U.S. counterparts on excess reserves deposited with the Fed. Consequently, foreign branches almost doubled their total reserve holdings, to \$650 billion, more than 40 percent of their total financial assets, in 2011 (see Figure 6.a). This arbitrage resulted in an unusual situation in which foreign branches held 50 percent of all reserves at the Fed (Goulding and Nolle 2012), as shown in Figure 6.b.

The plethora of post-crisis monetary policy and regulatory changes led to a dramatic shift in foreign branch behavior. Before the financial crisis, U.S. foreign branches served as a source of dollar funding for their home offices, resulting in a net outflow of funds from foreign branches to their home offices, as shown in Figure 7. However, the arbitrage opportunity brought about by post-crisis U.S. monetary and regulatory policies caused foreign banks to change their business models to take advantage of this opportunity. Starting in 2011, foreign branches drew funding from their parent banks, reversing the pre-crisis direction of net transfers. From extending net credits of \$400 billion at the end of 2010, foreign branches' positions reversed by more than \$500 billion. At the end of 2011, they were drawing \$135 billion to fund the increased IOER arbitrage. This reversal continued to ramp up, and by 2013 net funding from parent banks accounted for 16 percent of foreign branches' total liabilities. At the same time they were tapping offshore wholesale funding via their parent banks, foreign banks increased their direct use of wholesale funding from the U.S. onshore market.<sup>29</sup>

25. For a more detailed introduction to the changes regarding reserves at the Federal Reserve and monetary policy, see Bowman, Gagnon, and Leahy (2010).

26. Benmelech (2012) shows that this was in part funded by unconventional monetary policy, as foreign banks accounted for almost 60 percent of all Term Auction Facility loans.

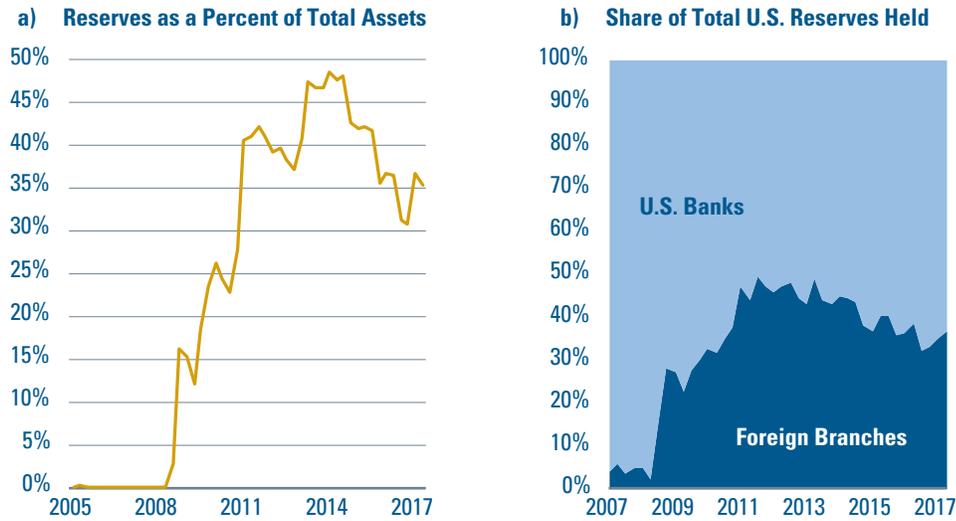
27. The base of the FDIC deposit insurance premium changed from a given bank's insured deposits to its total assets minus capital. This implied that balance sheet expansion via nondeposit sources of funding was now more expensive for banks with FDIC insured deposits—i.e., all domestic US banks. For more details, see Federal Register 76, no. 38 (February 25, 2011): 10671-10733.

28. Based on interviews, Kreicher, McCauley, and McGuire (2013) estimate that the change in premium assessment caused overnight wholesale funding rates to decrease by 5 to 10 basis points.

29. Kreicher, McCauley, and McGuire (2013) compare changes in onshore and offshore money market rates during the relevant period and provide an in-depth analysis of the shift in foreign branches' funding structure in response to the FDIC insurance assessment change.

FIGURE 6

FOREIGN BANKS' U.S. BRANCHES: A CHANGE IN BUSINESS MODELS



Source: Federal Reserve.

FIGURE 7

INTERBANK TRANSFERS BETWEEN FOREIGN BANKS AND THEIR U.S. BRANCHES



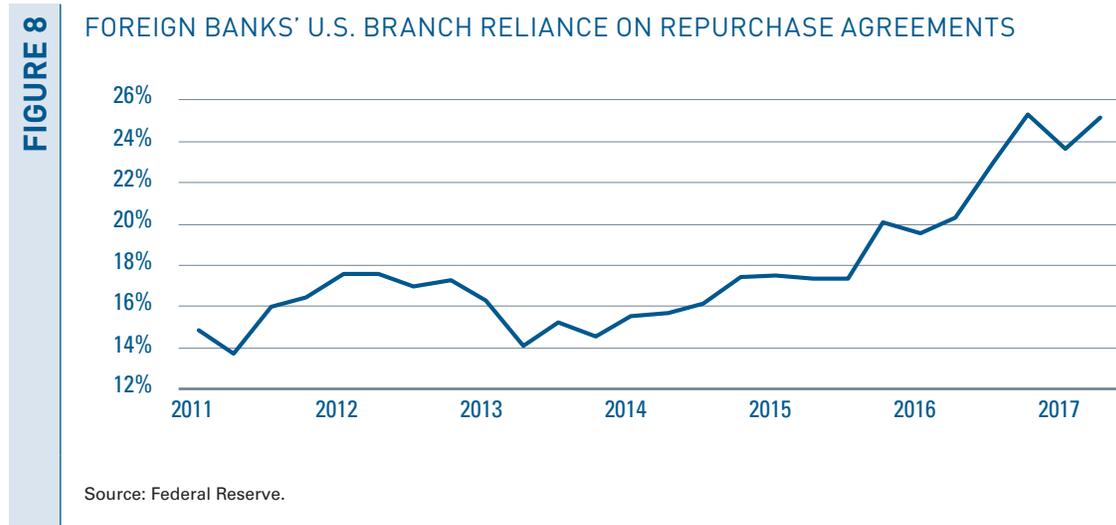
Source: Federal Reserve.

In October 2016, money market fund reforms further changed the provision of wholesale funding considerably, which further affected foreign branch behavior. The new rules required institutional prime funds to float their net asset value and impose redemption gates and fees. The aggregate size of institutional prime funds fell by almost 74 percent, or \$1 trillion. In effect, financial intermediaries had to replace nearly \$500 billion in funding as prime funds withdrew from buying commercial paper and reduced their deposits at both foreign and domestic banks (Wilhelmus and Adams-Kane 2017).

The scarcity of bank funding from anticipations of these reforms started as early as 2014 when the SEC initially proposed the changes (see Figures 6.a and 6.b). Domestic banks found an alternative source of funding by increasing their reliance on loans from the Federal Home Loan Banks (Adams-Kane and Wilhelmus, 2017). Foreign branches did not have that option but

nonetheless had to accommodate an aggregate withdrawal of \$350 billion from their parent banks (see Figure 7).

Consequently, the foreign branches adjusted both the liability and asset sides of their balance sheets. On the funding side, branch borrowing via repurchase agreements (repo) increased from \$250 billion to \$480 billion between 2015 and the third quarter of 2017. As of September 2017, 25 percent of foreign branches' short-term funding was from the repo market (see Figure 8). On the asset side, foreign branches reduced their holdings of reserves by around \$300 billion, from a peak of roughly \$1.08 trillion (see Figure 6.a).



### Conclusion: We Must Be Vigilant About Combined Effects of Individual Monetary and Macroprudential Policy Changes

Although foreign branches were not the intended targets of changes to the U.S. monetary policy operational framework, deposit insurance assessments, or money market reforms, these changes combined to induce a significant shift in foreign branches' prevailing business models. This example emphasizes the importance of taking an inter-sectoral and cross-border approach when fine-tuning the regulatory framework. When it comes to financial stability, the challenge is to not only design effective regulations but to be mindful of how all the participants in the financial system are adjusting. Future risks will be driven by changes in business models, which, as we have seen, are likely to arise from regulatory changes, shifts in monetary policy, and their interactions. As Jaime Caruana (2017), general manager of the Bank for International Settlements, recently remarked:

*"The task of maintaining financial stability goes beyond ensuring effective regulation and supervision. The vulnerabilities in the financial system often have multiple causes. It is therefore important to recognise the interactions across policy domains in order to deliver an adequate combination of policy actions—a combination that helps to meet all objectives effectively."*

Avoiding piecemeal, ad hoc regulatory changes by taking a holistic approach toward policy design is a crucial lesson that has not been adopted by those engaged in formulating macroprudential policy. We continue to call for regulators to consider the system-wide impact of their actions and to recognize the limitations as well as the unintended consequences of their policy initiatives (Lopez, Markwardt, and Savard 2015).

In its two recent reports on the financial system, the U.S. Treasury did advocate a modernization and rationalization of the regulatory framework to address the "cumulative impact of the regulatory environment" (U.S. Treasury 2017a, and b). Such a systematic reassessment appears

quite timely given the Fed's strong signal toward an approaching normalization of its balance sheet (Federal Open Market Committee statement, Sept. 20, 2017). Just as the combined effects of the IOER and subsequent regulatory changes led foreign bank branches to change their business models, one can expect the reduction of the size of the Fed's and the European Central Bank's balance sheets to trigger substantial—and as yet unknown—reactions across the financial system in the U.S. and abroad.

## References

- Adams-Kane, Jonathon and Jakob Wilhelmus. "The Real Story Behind the Surge in FHLB Advances: Macroprudential Policy Changed How Banks Borrow." *Milken Institute Viewpoints*, September 2017.
- Aldasoro, Iñaki, Torsten Ehlens, Egemen Eren, and Robert N. McCauley. "Non-U.S. Banks' Global Dollar Funding Grows Despite U.S. Money Market Reform." *BIS Quarterly Review*, March 2017: 22-23.
- Benmelech, Efraim. "An Empirical Analysis of the Fed's Term Auction Facility." *Cato Papers on Public Policy 2* (2012): 57-91.
- Bowman, David, Etienne Gagnon, and Mike Leahy. "Interest on Excess Reserves as a Monetary Policy Instrument: The Experience of Foreign Central Banks." *Board of Governors of the Federal Reserve System International Finance Discussion Papers*, no. 996 (March 2010).
- Caruana, Jaime. "Challenges for Regulators and Supervisors After the Post-Crisis Reforms." Speech at the FSI Conference on Supervisory Policy Implementation in the Current Macro-Financial Environment. "A Cross-Sectoral Journey," Basel, Switzerland. September 18, 2017.
- Federal Reserve System. *102nd Annual Report*. Board of Governors of the Federal Reserve System, 2015.
- Goulding, William and Daniel E. Nolle. "Foreign Banks in the U.S.: A Primer." *Board of Governors of the Federal Reserve System International Finance Discussion Papers*, no. 1064r (December 2012).
- Kreicher, Lawrence L., Robert N. McCauley, and Patrick McGuire. "The 2011 FDIC Assessment on Banks' Managed Liabilities: Interest Rate and Balance-Sheet Responses." *BIS Working Papers*, no. 413 (2013).
- Lopez, Claude, Donald Markwardt, and Keith Savard. *Macroprudential Policy: A Silver Bullet or Refighting the Last War?* Santa Monica, CA: Milken Institute, July 2015.
- U.S. Department of the Treasury. *A Financial System That Creates Economic Opportunities: Banks and Credit Unions*. Washington, D.C.: U.S. Department of the Treasury, June 2017(a).
- U.S. Department of the Treasury. *A Financial System That Creates Economic Opportunities: Capital Markets*. Washington, D.C.: U.S. Department of the Treasury, October 2017(b).
- Wilhelmus, Jakob, and Jonathon Adams-Kane. "Regulation Almost Destroyed Money Market Funds, but Cash Management Needs Kept Them Alive." *Milken Institute Viewpoints*, July 2017.

# SECTION III

The Asset Management Industry  
and Financial Stability



# THE ASSET MANAGEMENT INDUSTRY, SYSTEMIC RISK, AND MACROPRUDENTIAL POLICY

CLAUDE LOPEZ | APRIL 2017<sup>30</sup>

## Key Points

- Systemic risk is distinct from run-of-the-mill financial or operational risk, an important difference to keep in mind when determining whether the sector poses a risk to the broader financial system with the potential for negative spillovers into the real economy.
- Because asset managers do not take on nearly the same level of leverage as banks and do not guarantee balances on customer accounts, as banks do with deposits, it is unlikely that the industry is the epicenter of—or creates—systemic risk. Theoretically, however, asset managers have the potential to transmit or amplify systemic risk based on unique factors such as herding and liquidity mismatches.
- In a post-crisis world, regulators have as much—if not more—power as financial firms' shareholders. Using this power wisely to simplify rules and minimize complex regulatory changes to the financial system may be the best way to achieve long-term financial stability.

## Considerations should include:

- ▶ **The dynamic relationship between financial regulation and financial activity:** Rules must be targeted sufficiently to strengthen resilience of the desirable economic functions (such as lending to firms), but simplified enough to limit regulatory avoidance.
- ▶ **The necessity of proper fiscal and monetary policies to complement prudential oversight:** No amount of asset management oversight can prevent investors from reaching for yield in response to extraordinarily low interest rates to meet their investment goals.
- ▶ **The reality that financial markets are connected globally:** Domestic oversight without internationally coordinated policies leaves marked gaps susceptible to opportunism and regulatory arbitrage.

## The Asset Management Industry, Systemic Risk, and Macroprudential Policy

In the aftermath of the 2007–2008 financial crisis, new legislation and regulations have pressured banks and insurance companies to reduce their size, leverage, and riskier lines of business in order to avoid another too-big-to-fail debacle. Nonbank financial intermediaries have naturally taken up some of that slack, and, not surprisingly, regulatory scrutiny has turned toward these intermediaries, especially asset management firms, to evaluate whether they could pose similar risks to financial stability as banks did pre-crisis.

Yet, most of the existing literature and regulatory tools on financial stability focus on the banking system and overlook the fact that the asset management industry and its subsectors are different from that system and perform vastly different roles. The challenge is to define an appropriate framework that would provide the appropriate safeguards when it comes to the asset management industry. As a result, the appropriate macroprudential framework would require a significant departure from the current one as asset managers do not present the same risks as banks. Yet as discussed in reports by the Financial Stability Oversight Council (2016) and the Financial Stability Board (2016, 2017), asset managers may possess other dynamics that could contribute to the transmission of systemic risk, or even amplify it.

30. The article is based on an earlier MI report titled “The Asset Management Industry and Systemic Risk: Is There a Connection?” co-authored with D. Markwardt and K. Savard.

This article analyzes and assesses the ways in which the asset management industry might act as a catalyst or contributor to systemic risk. It proceeds as follows: Section 1 recalls the definition of financial stability and systemic risk before turning to those risks specific to the asset management sector that are of concern from a macroprudential perspective; Section 2 discusses the pertinence of the current framework in regulating asset managers from a financial stability perspective; Section 3 explores the necessity of such a role, highlighting the differentiating factors between traditional targets of macroprudentialism (banks) and asset managers; Section 4 concludes.

## Financial Stability and Systemic Risk

Reforms since the financial crisis have focused on financial stability and systemic-risk mitigation. While these two notions play a key role in the current regulatory environment, defining them in a tractable, time-sensitive, and relevant manner remains a challenge.

Financial stability is often defined in terms of “its ability to facilitate and enhance economic processes, manage risks, and absorb shocks” (Shinasi 2014). It is worth emphasizing that such a definition does not imply protecting badly run firms or creating a risk-free environment. Ensuring such stability is a complex, difficult task that requires identifying commonly agreed-upon objectives as well as their unintended consequences among regulators, firms, and clients/investors.

Conceptually, once agreed upon, these financial-stability objectives should be used to define, measure, and monitor the aspects of systemic risk deemed pertinent and “anticipatable.”<sup>31</sup> Ultimately, the relevant mix of macro- and microprudential tools should be used to mitigate it. Unfortunately, there are no hard boundaries between systemic and nonsystemic risk, and the ever-evolving financial landscape requires regular assessment of both objectives and how to achieve them. In other words, monitoring systemic risk and operationalizing a policy response to it remain a challenge because only the outcome of the risk, not the risk itself, can be directly observed.

## Asset Management: A Segmented Industry

Figure 9 shows the increased importance of asset managers, as they now oversee nearly a quarter of domestic financial assets, up from less than 3 percent in 1980.

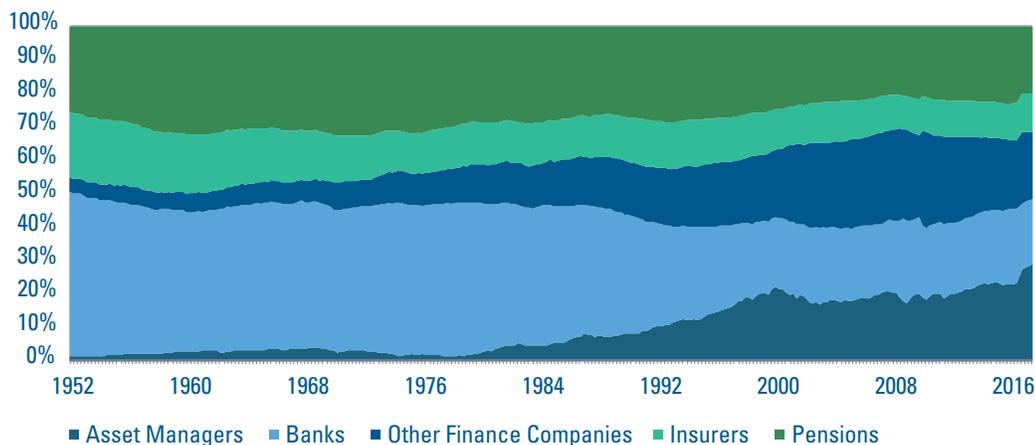
Broadly defined, asset managers provide investment services as fiduciary agents for their clients, using a wide variety of specific asset management models. A summary of the major fund families’ characteristics and risk profiles can be found in the IMF’s Global Financial Stability Report (2015). They complement existing financial players in their function, as shown in Figure 10; and they service not only households, businesses, and governments, but also other categories of financial intermediaries, including banks, pension funds, and insurance companies.

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31. Systemic risk is usually defined as a “risk of disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to have serious negative consequences for the real economy” (IMF, FSB, BIS). Yet Reinhart and Rogoff (2009) suggest that more than 50 percent of the financial crises come from the real side of the economy.

FIGURE 9

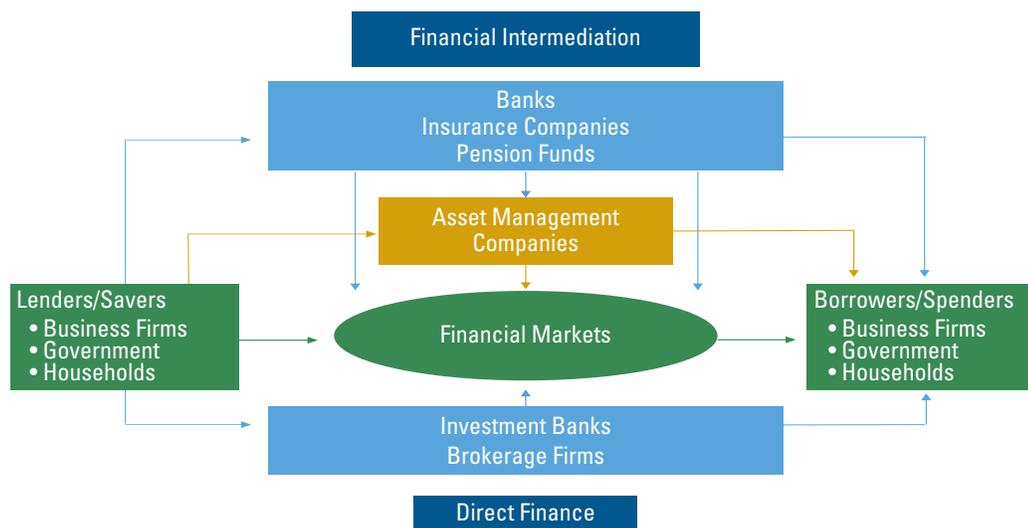
U.S. FINANCIAL ASSETS BY INDUSTRY AS OF DECEMBER 2017



Source: updated Lopez et al. (2016).

FIGURE 10

FLOW OF FUNDS IN THE FINANCIAL SYSTEM



Source: Delbecque (2012).

Overall, asset managers are engaged in activities occurring either at the management-company level or at the fund level. Management-company activities include administration, centralized execution of trades, risk management, and market research, while fund-level activities include overall asset allocation, selection of specific securities, and liquidity management. Fund shareholders receive any profits or losses while the asset managers' primary source of revenue is from fees for services.<sup>32</sup> Furthermore, the separation between the custody and the management of assets protect investors from the risk of default of the asset manager.

### From Financial to Systemic Risk

The Basel III framework of financial reforms identifies two dimensions across which financial agents create or amplify systemic risk: either through exacerbating the extremes of the financial cycle (procyclical risk) or increasing fragility across financial sectors or institutions (contagion

32. Private funds, such as hedge funds, are a partial exception to this rule, as they are not subject to restrictions on receiving performance fees, which gives the management company a direct stake in the performance of the funds.

risk). Activities and incentives built into the asset management industry could transmit or potentially amplify risk across both dimensions.

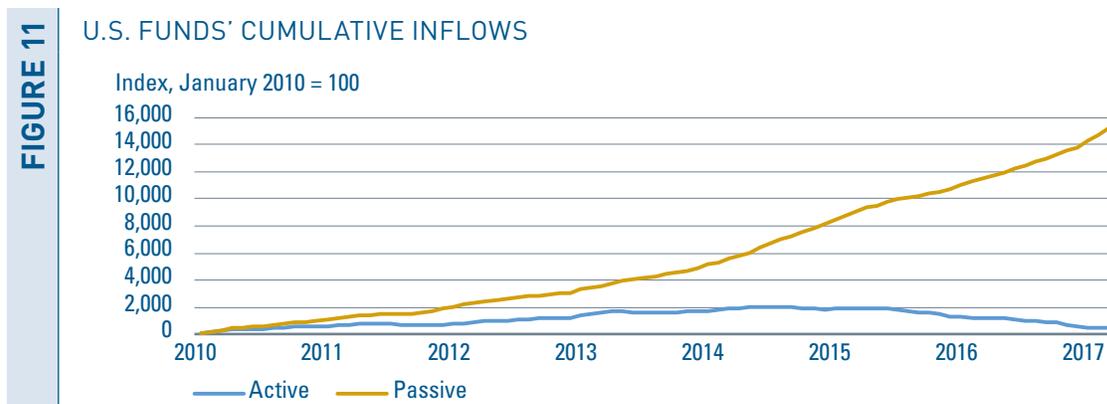
Theoretically, asset managers do not face the same risks as banks and insurers (other than operational risks). Yet their fiduciary obligation exposes them to some financial risks. As a result, the question is whether the individual risks can become systemic and, if so, via which channels. This section provides a closer look at two types of risks—herding and liquidity risks—that stand out as specific to asset managers, particularly among the “plain vanilla” investment funds, such as mutual funds and ETFs.

## Herding and Procyclical Risk

The fund management industry has traditionally operated with managers actively selecting securities on behalf of their investors. Competing for clients based on relative performance, fund managers are measured against a comparable benchmark. For portfolio managers who are risk-averse or face career risk when falling in a lower percentile of performance, there are incentives to “herd” into positions similar to those of their peers and not stray too far from the benchmarks. This can create strong disincentives for a manager to take countercyclical positions, resulting in “chasing yield” during upswings in the financial cycle and herding to sell positions during cycle downturns, thus exacerbating financial bubbles and the devastation of their fallout (Feroli et al. 2014). The IMF’s Global Financial Stability report (2015) notes that U.S. mutual funds now exhibit significantly more herding behavior than in 2009, just after the crisis.

It is unclear to what extent these herding dynamics contribute to financial bubbles or if they are merely symptomatic. Equally unclear is what, if anything, can be done to mitigate these potentially destabilizing incentives. Figure 11 shows that both retail and institutional end investors appear to be moving toward cutting active managers out of the investment process and self-directing investment decisions using passive indexes.

The rise of passively managed funds—those that track indexes without fund managers actively selecting securities—introduces new potential consequences for the financial cycle and stability. The majority of passive funds buy or sell securities based on the market capitalization weights of their respective indexes. This can lead to a “momentum bias” in which fund managers must buy (or sell) the fastest-appreciating (or depreciating) index constituents, again exacerbating the highs and lows of financial asset price cycles (Jones 2015).



Source: Morningstar.

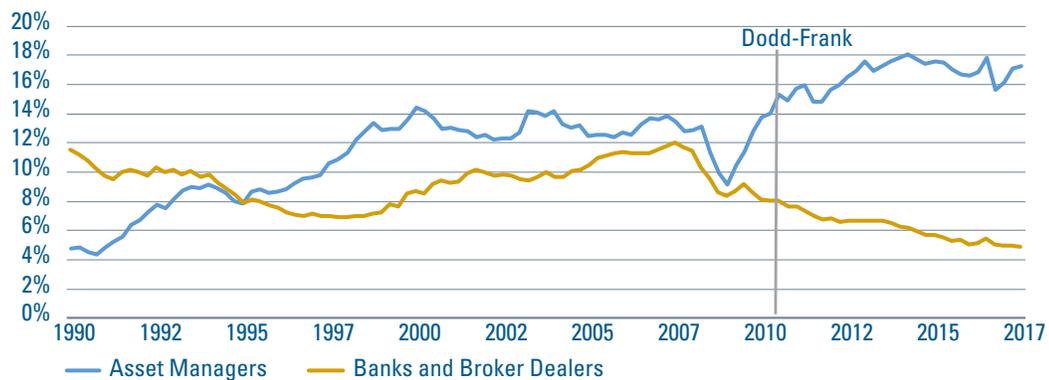
While it generally is accepted that limits to arbitrage exist that could lead to unconstrained asset price bubbles, it is less obvious that anything could reasonably be done to mitigate these unmeasurable impacts. Potential reforms such as introducing alternative benchmarks or altering investor-manager contract designs with stronger emphasis on long-term performance appraisal are unlikely to be adopted by the industry en masse and would be difficult to enforce on a regulatory basis. Regulatory attention instead is turning primarily toward the other major perceived risk emerging from the asset management industry: liquidity mismatches in investment funds.

## Liquidity and Contagion Risk

The implementation of the Dodd-Frank Act following the financial crisis placed greater constraints on the ability of banks and dealers to engage in various risky activities, including warehousing bond risk on their inventories (see Figure 12). The result has been a sharp decline in the ability of dealers to offer two-way quotes (an offer to buy *or* sell a given security). While bonds have always been more difficult to trade compared with equities given their size and lack of standardized exchange, the diminishing role of dealers in the bond market has led many fund managers to complain that bonds—corporate bonds in particular—have become increasingly illiquid.

FIGURE 12

SHARE OF CORPORATE AND FOREIGN BOND OWNERSHIP



Source: Federal Reserve.

Note: A recent revision led to mutual fund holdings of debt securities to be reported at market value rather than at book value.

This refers to *market liquidity*, the ability to trade securities without creating adverse price movements. As bond market liquidity and broker-dealer bond inventories have declined, investment funds' ownership of corporate debt securities has risen substantially, in part displacing previous broker inventories but also in response to greater demand for corporate bond mutual funds and ETFs. Notably, as sluggish global growth and easy monetary policies have pushed interest rates to lows not witnessed in recent decades, there has been an increased appetite for higher-yielding instruments such as emerging-market bonds, leveraged loan funds, and domestic high-yield corporate bonds.

While many of these higher-yielding securities have grown increasingly illiquid (and owe part of their additional yield to the illiquidity factor), the proliferation of mutual funds and ETFs providing exposure to these securities continues to offer end investors very liquid redemption terms. Investors can easily buy and sell the funds on a daily basis without meaningful gates or fees. This contrast between highly liquid redemption terms and the illiquid underlying securities that the funds invest in creates a *liquidity mismatch*, a concern for regulators and many in the industry.

Liquidity mismatches on a large scale are of concern to financial-stability monitors because of their ability, in a worst-case scenario, to cause a "death spiral" of mass investor redemptions, causing fire-sale asset prices, which leads to further investor withdrawals. Studies, including Goldstein et al. (2016) and Feroli et al. (2014) find that funds investing in less-liquid corporate bonds experience disproportionately high outflows in response to bad performance, and that these outflows can create destabilizing financial shocks, even in the absence of significant leverage or actions by leveraged intermediaries. Manconi et al. (2012) find that funds holding illiquid bonds during the market turmoil of the global financial crisis were forced to sell higher-quality, investment-grade bonds to raise cash, thus "propagating the crisis" across the entire corporate bond sector—suggesting the potential for cross-sector contagion.

To some extent, this fire-sale scenario is analogous to countless historical examples of bank runs in which depositors rushed to withdraw their funds before the bank ran out of money, or, more recently, the "breaking of the buck" in money market mutual funds that sparked extreme fears in the aftermath of Lehman Brothers' collapse. Unlike banks or money market funds,

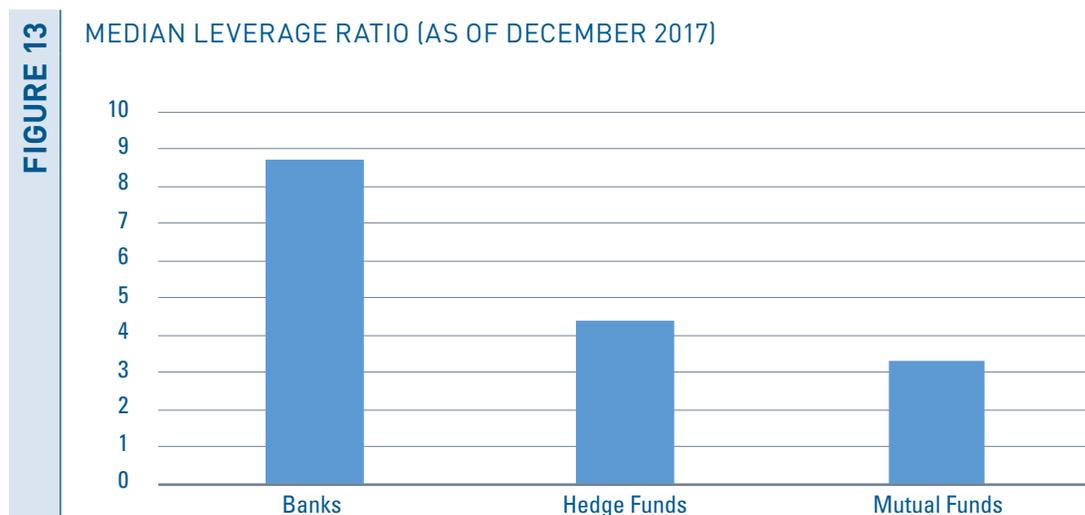
investment funds do not guarantee investor balances; rather, they float with the net asset value (NAV) that provides an up-to-date cash value of the fund’s underlying investments. Nonetheless, they can still be vulnerable to redemption runs when investors have a “first-mover advantage,” as is the case with mutual funds. Focusing on the high-yield sector, Lopez et al (2016) illustrates how major disruptions to the sector’s funding environment could have a significant impact on the real economy.

## The Current U.S. Macroprudential Policy Framework

The initial targets of the Basel III and Dodd-Frank reforms were banks or institutions presenting similar transmission channels in terms of systemic risk, mostly based on leverage. As discussed previously, this framework identifies two risk dimensions that may threaten the stability of the entire financial system: across institutions (contagion risk, mostly using the SIFI denomination) or across the financial cycle (procyclical risk). Both dimensions are closely linked and their problems often accumulate at the same time.<sup>33</sup> This section compares the current framework with the risks it should be assessing.

## Systemically Important Financial Institutions

The SIFI denomination relies on the size of an institution. This proxy seems adequate when assessing the amplitude of risk that banks can generate to the system. By contrast, most fund managers tend to have simpler funding mechanisms. Figure 13 shows that they incorporate little or no leverage, while Table 1 compares the potential solvency risks banks and asset managers might experience during crisis periods when asset prices fluctuate.<sup>34</sup> It also shows that some asset managers are divisions of institutions already identified as SIFIs.



Sources: Updated Lopez et al. (2016).

Note: Calculations are for U.S. institutions; average of the Basel III leverage ratio for banks; gross assets to net assets for funds.

33. While the size of the banks’ balance sheet and degree of leverage have been identified as potential contagion risks, Shin and Shin (2011), and Lopez et al. (2015), have shown that looking at funding sources provides information regarding procyclical risk, especially banks’ excessive reliance on “noncore” liabilities, and short-term funding in particular.
34. Hedge funds often make use of short-term funding arrangements and achieve leverage synthetically through the use of derivatives, but on average they are not leveraged to the same extent as banks.

## LARGEST U.S. BANKS VS. ASSET MANAGERS

	Total Assets (US\$ billions)	Financial Leverage		Assets Under Management (US\$ billions)	Gross Fund Leverage
JPMorgan Chase	2,533	11.3	BlackRock	5,976	1.1
Bank of America	2,281	9.3	Vanguard	3,148	1.1
Wells Fargo	1,951	10.7	State Street Global Advisors*	2,448	1.0
Citigroup	1,843	10.1	Fidelity Investments	1,974	1.1
U.S. Bancorp	470	14.5	BNY Mellon Wealth Management*	1,710	n/a

Source: Lopez et al (2016).

Note: \* Asset managers that are divisions of SIFIs (insurers or banks).

If the definition of systemic risk focuses on the possibility of disruption to the real economy and the dislocation of markets, then the main concern related to the size of asset managers is the potential for direct wealth loss. However, this issue fades in importance when considered in conjunction with the interconnectedness and substitutability of an institution. Interconnectedness measures the potential of one firm to transmit financial distress to others. The more a firm is able to transmit distress, the greater potential impact its own distress can have. Substitutability focuses on the critical functions performed by an asset manager and the extent to which other firms could provide similar services at a similar price in a timely manner in the case of its failure. The asset management industry is an intensely competitive business with relatively low barriers to entry, hence substitutability from the perspective of investors in the market for investment management services is of limited concern. However, it is important to consider the degree to which the manager or its funds are a hard-to-replace source of financing for certain businesses or sectors of the economy. Due to both interconnectedness and substitutability, the effects of asset managers on the economy depend on the asset classes, while the channels of risk transmission (and their complexity) depend on the instruments used and how they are combined.<sup>35</sup>

## Liquidity Risks

The financial crisis has shown that a family of funds such as money market funds could lead to a systemic crisis via two channels: liquidity risk and connections between lightly regulated businesses and banks.

As a direct response to the first issue, the SEC in 2014 adopted a set of rules that “require a floating net asset value (NAV) for institutional prime money market funds that allows the daily share prices to fluctuate with changes in the market-based value of fund assets and provide nongovernment money market fund boards new tools—liquidity fees and redemption gates—to address runs” (SEC website). More recently, the SEC has proposed rules for mutual funds and ETFs to set up programs for managing liquidity risks and broaden disclosures about their liquidity and redemption practices. Furthermore, the Dodd-Frank Act requires the SEC to run stress tests on asset managers of more than \$10 billion in assets. Since, as previously discussed, banks’ and asset managers’ business models are significantly different, the methodology needs to be adjusted. So far there is no consensus on how to define and measure the concepts of liquidity and leverage that matter in the context of systemic-risk buildup within the asset management industry. In 2017, the Financial Stability Board requested that the International Organization of Securities Commissions (IOSCO) provides appropriate measures for liquidity by the end of 2017, and for leverage by the end of 2018.

35. Roncalli and Weisang (2015) generate a set of simulations to illustrate this point.

Dodd-Frank addresses the second issue by requiring central clearing of standardized derivatives transactions. The resulting strengthening of central clearing counterparties (CCP) or clearinghouses comes with a trade-off. It makes the credit chains more transparent, providing a foundation for centralized risk-management and data-processing operations. However, it also concentrates credit, liquidity, and operational risk within the CCPs. The Commodity Futures Trading Commission (CFTC) is also required to implement stress tests on CCPs in order to monitor potential systemic-risk buildup, but it runs into difficulties similar to those at the SEC.

The challenges faced by the SEC and the CFTC led to the creation of a working group within the FSOC to investigate these issues, including counterparty exposures, margin investing, trading strategies, and possible standards for measuring leverage.<sup>36</sup> These discussions and consultations are part of a broader international program led by the Financial Stability Board (2016, 2017).

## Herding

Basel III is, by design, unable to discourage herding behavior because it relies on the asymptotic single risk factor model to compute capital requirements for the monitored institutions. The model assumes that all financial institutions have diversified portfolios and are all exposed to the same single risk factor. Wagner (2010) discusses the tradeoff between ensuring that they all have the same prudent behavior and encouraging heterogeneity in risk taking. Recent reforms could encourage more correlation across banks and financial institutions, and similar reasoning would hold for asset managers if stress tests were to assess their reactions to a common shock.

## Macroprudential Policy for Asset Management?

The asset management industry encompasses a wide variety of business activities ranging from traditional asset management to alternative investing and direct lending. In other words, it is a highly segmented industry with minimal information available to regulators attempting to monitor it. Little is known about the importance of portfolio size compared with the possibilities of nonlinear and threshold effects given the strategic situations of the institutions involved. Furthermore, given the absence of clear regulatory leadership, designing a coherent body of rules would require a significant amount of coordination among the different institutions, such as the SEC and CFTC.

While asset managers have not been the primary focus of recently introduced macroprudential policy, they continue to be affected by it. Basel III and, for the U.S., Dodd-Frank moved riskier activities (proprietary trading) off banks and onto nonbank intermediaries. New regulations are still being implemented, including the Department of Labor's own fiduciary rule and the "living wills" of large banks.<sup>37</sup> Furthermore, the regulatory and political momentum that followed the financial crisis is fading, leading to some questioning of the current framework and its potential expansion to the asset management industry.<sup>38</sup> So far, regulators seem mostly focused on identifying the largest potential sources of systemic risk rather than the likelihood of a systemic shock originating from a specific institution.<sup>39</sup> This approach captures the functional risk of banks where size is an appropriate proxy of importance when it comes to systemic risk. "However, in the case of asset managers, it would confuse large institutions with systemically strategic institutions, giving wealth loss too much importance over the potential for broader economic disruptions and market dislocations" (Lopez et al. 2016)<sup>40</sup>

The noted segmentation of the asset management industry explains in large part the industry's resilience as a whole, as well as its usefulness to the real economy. It is, by business design

36. UCITS and European alternative investment funds have been subject to such requirements and have had access to a range of liquidity management tools for some years.

37. The Department of Labor's fiduciary rule is not part of the Dodd-Frank Act, but an initiative competing with the SEC fiduciary rule.

38. Lopez and Saeidinezhad (2016) provide an assessment of the implementation of Dodd-Frank.

39. The SIFI denomination ignores whether the scenarios suggested in the stress tests are likely or not.

40. See also Roncalli and Weisang (2015).

(low cost of entry, fiduciary activity), a dynamic industry that evolves and adjusts to new conditions (direct or indirect regulations, technological progress, or very low interest rates) and passes all asset-value fluctuations to its clients. As a result, monitoring and regulating the asset management industry is quite challenging. One approach suggested by both the market participants and regulators, is to regulate by specific type of activity that provides an economic function and which, if failing, would trigger systemic crises (ESRB 2016, BlackRock 2017, FSB 2017). Then the appropriate resolution strategies should be designed to avoid such chaos.

This approach implies an iterative process or rounds of communication among all parties (regulators, firms, and their clients) to secure the buy-in of all sides. Cooperation among all parties is required to minimize unexpected consequences such as pushing risky activities in a more shadowy environment or generating unrealistic expectations among investors. It would also reduce the risk posed by layers of uncoordinated regulations due to the numerous institutions overseeing part of the same industry. The current setup of the FSOC could facilitate such a process as long as it remained politically independent and a lead institution was identified to oversee the asset management industry.

Setting the regulatory agenda moving forward, the Financial Stability Board (2016) has identified four asset management activities that could potentially threaten financial stability: liquidity mismatch, leverage within investment funds, operational risk and challenges under duress, and security lending activities. Most of the FSB's recommendations are at the fund level and rely on the International Organization of Securities Commissions to operationalize them. Recommendations include strengthening the transparency and existing microprudential guidance by enhancing and standardizing data collection across jurisdictions; strengthening best practices, especially in terms of liquidity risk management; and stress testing at the fund level. In contrast, few recommendations focus on stability of the financial system. They advocate for system-wide stress tests and a risk management framework linked to the asset managers' ability to disrupt the financial system. It is worth noting that these recommendations—while using Basel III's key words: stress test and orderly resolution—rely on a framework that is being currently developed while the financial system is still adjusting to the post-crisis regulatory framework.

## Conclusion

This article has highlighted the challenges of a system-wide monitoring of asset management and have questioned such an approach. The advocated alternative is to regulate by function, imposing similar regulations for institutions performing similar tasks (for example, depository institutions and money market funds) and for having requirements set consistently across markets and institutions.<sup>41</sup>

Yet it also seems necessary to take a step back and remind ourselves of the required, but not sufficient, elements for the successful use of prudential regulation in mitigating systemic risk. First and foremost, prudential policies are complements to—not substitutes for—proper macroeconomic policies (monetary, fiscal, structural). The current global monetary policy stance with pervasive low or negative interest rates and continued divergence among major central banks could generate financial instability that prudential policies would be unable to fix. Second, many financial markets and actors are international. As a result, successful toughening of prudential requirements necessitates international coordination, yet the political momentum for such efforts has significantly weakened in recent years. Frankel (2016) provides several reasons why such coordination remains a challenge, as shown in recent G-20 and G-7 summits. Third, the financial world is highly complex, whether due to business models or extremely integrated activities across different industries. Therefore, it is rather unlikely that any data sets will provide a complete understanding or mapping of all the risk profiles. As a result, limitations should be clearly accounted for when designing regulations and their goals.

Looking ahead, it will be important for political decision-makers and regulators to realize that the nature of systemic risk will change with the evolution of the financial landscape.

41. See Richardson (2014): "If the risk of the underlying loans is the same, it should not matter how those loans are sliced and diced through securitization in terms of determining the required capital buffer of banking institutions."

Hence, the rules or policies should be targeted sufficiently to strengthen resilience of the desirable economic functions (such as lending to firms) but simple enough to limit regulatory avoidance.

The center of power in finance is shifting to the buy side. As assets under management rise toward \$100 trillion by 2020 (according to some projections), the buy side is poised to replace banks as the major source of funding for deals and underwriting. In the post-crisis world, regulators have as much, if not more, power as shareholders. Using this power wisely to simplify rules and minimize complex regulatory changes to the financial system while providing the right incentives for the private sector to adopt proper governance and monitoring seems the best way to achieve long-term financial stability and benefits to the real economy.

## References

- BlackRock Viewpoint, "Macroprudential Policies and Asset Management," February 2017.
- Delbecque, Bernard, "Key Functions of Asset Management," VOX EU, March 2012.
- European Systemic Risk Board (ESRB), "Macroprudential Policy Beyond Banking: An ESRB Strategy Paper," July 2016.
- Feroli, Michael, Anil K. Kashyap, Kermit Schoenholtz and Hyun Song Shin, "Market Tantrums and Monetary Policy, The Initiative on Global Markets," Working Paper No. 101, February 2014.
- Financial Stability Board, "Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities," January 2017.
- Financial Stability Board (FSB), "Proposed Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities," June 2016.
- Financial Stability Oversight Council, "Update on Review of Asset Management Products and Activities," April 2016.
- Frankel, Jeffrey A, "International Coordination," NBER Working Paper 21878, 2016.
- Goldstein, Itay, Hao Jiang and David T. Ng, "Investor Flows and Fragility in Corporate Bond Funds," Wharton working paper, May 2016.
- International Monetary Fund (IMF), Global Financial Stability Report, 2015.
- Jones, Bradley, "Asset Bubbles: Re-Thinking Policy for the Age of Asset Management," IMF Working Paper No. 15/27, 2015.
- Lopez, Claude, Donald Markwardt and Keith Savard, "Macroprudential Policy: What Does It Really Mean," *Banking and Financial Services*, 34 (10) 1-10, October 2015.
- Lopez, Claude, Donald Markwardt and Keith Savard, "The Asset Management Industry and Systemic Risk: Is There a Connection?" Milken Institute, September 2016.
- Lopez, Claude and Elham Saeidinezhad, "Dodd-Frank: Washington, We Have a Problem," Milken Institute, June 2016.
- Reinhart, Carmen M. and Kenneth S. Rogoff, "The Aftermath of Financial Crises," *American Economic Review*, 99(2) 466-72, 2009.
- Richardson, Matthew, "Regulating Wall Street: The Dodd-Frank Act, Dodd-Frank Wall Street Reform and Consumer Protection Act," World Scientific-Now Publishers Series in Business, 2: 33-56, 2014.
- Roncalli, Thierry and Guillaume Weisang, "Asset Management and Systemic Risk," working paper, December 2015.
- Shin, Hyun Song, and Kwanho Shin, "Procyclicality and Monetary Aggregates," NBER working paper 16836, 2011.
- Shinasi, Garry J., "Defining Financial Stability," IMF working paper No. 04/187, October 2004.
- Wagner, Wolf, "Diversification at Financial Institutions and Systemic Crises," *Journal of Financial Intermediation*, 19(3) 373-386, 2010.





# CENTRAL COUNTERPARTIES HELP, BUT DO NOT ASSURE FINANCIAL STABILITY

CLAUDE LOPEZ AND ELHAM SAEIDINEZHAD | JULY 2017

## Key Observations

- Central counterparties (CCPs) provide derivative markets with benefits of multilateral netting and better collateralization, and assurances of trade finality and settlement, and help bolster market integrity.
- Strengthening CCPs is a necessary but hardly sufficient condition to ensure financial system stability. Macroprudential policy should supplement the work of CCPs, specifically through:
  - » **Vigilant monitoring of market liquidity conditions** to ensure effective price discovery and market continuity. Regulators and supervisors must stand ready to support illiquid financial intermediaries if CCPs and markets threaten to seize.
  - » **A fast and certain recovery and resolution procedure** for failed CCPs. The process would facilitate the CCP's recapitalization and ability to resume its function within the financial system.

## Introduction

Central counterparties (CCPs) play a pivotal role in the post-crisis reforms of derivative market trading, especially for over-the-counter (OTC) derivatives. By stepping into the middle of trades, a CCP becomes “the buyer to every seller and seller to every buyer,” providing several benefits to market participants and promoting financial stability via multilateral netting and centralized default management.<sup>42</sup>

Since the reform, CCPs have become an indispensable part of the infrastructure for derivative trading. Around 75 percent of swaps are now cleared through clearinghouses, compared with just 15 percent before the financial crisis (Domanski, Gambacorta, and Picillo 2015). Such an increase in the concentration of trading exposure led regulators and market participants to worry about the resilience of CCPs to systemic shocks. The first regulatory reaction was to designate the largest CCPs as systemically important financial market utilities (SIFMUs), and to develop stress tests to evaluate their robustness and identify vulnerabilities. Furthermore, a default waterfall—a cascade of risk-mutualization backstops—is being designed to minimize the risk and the impact of a CCP member's failure

Despite their critical role in ensuring trades, regulators may become over-reliant on CCPs to safeguard the financial system. This note highlights some commonly held misconceptions and overly-complacent conclusions about CCPs' ability to stabilize financial markets, especially in the presence of systemic shocks. The current framework has been successful in reducing bilateral counterparty risk and securing CCPs' ability to clear securities trading. Yet, still missing is a full assessment of the consequences of CCP operations on other segments of the financial ecosystem, apart from their impact on derivatives trading.

Strengthening CCPs is a necessary but hardly sufficient condition to ensure financial system stability. In a post-crisis environment that is still reformulating and issuing new regulations, macroprudential regulators should be mindful of policies aimed at improving CCP functioning, inducing unintended consequences. Policymakers should also evaluate the potential for CCP margin requirements to be pro-cyclical, especially as CCP members become more interconnected among themselves and with other parts of the financial system. Policies that

42. See Heckinger et al. (2013) for more details on CCPs.

impose added responsibilities to CCPs may tax their ability to raise additional capital or liquidity during stressed market conditions. It is vital that in implementing new policies, assessments include how changes in CCP and market behavior affect third parties. Indeed, the new policies may induce undesirable and destabilizing system-wide behaviors.

Proactive measures by supervisors and regulators are needed to supplement the enhanced role of CCPs and monitor related changes in other parts of the financial infrastructure. Despite the potential for CCPs to ensure that derivative markets function smoothly, vigilant oversight by the public sector over systemically important functions of CCPs may still be needed to ensure the continuity of the trading system. Regulators and supervisors need to monitor market liquidity conditions, ensure effective price discovery, and stand ready to support illiquid financial intermediaries if CCPs and markets threaten to seize.

The remainder of the note briefly summarizes the role of CCPs and their benefits before identifying some key issues that will shape macroprudential policymaking going forward.

## Central Counterparties' Benefits in Dealing with Risk

By strengthening the integrity of the clearing process when market participants engage in trading activities, CCPs help ensure that each trade will be cleared and settled. With CCPs, we would expect benefits that include the following:

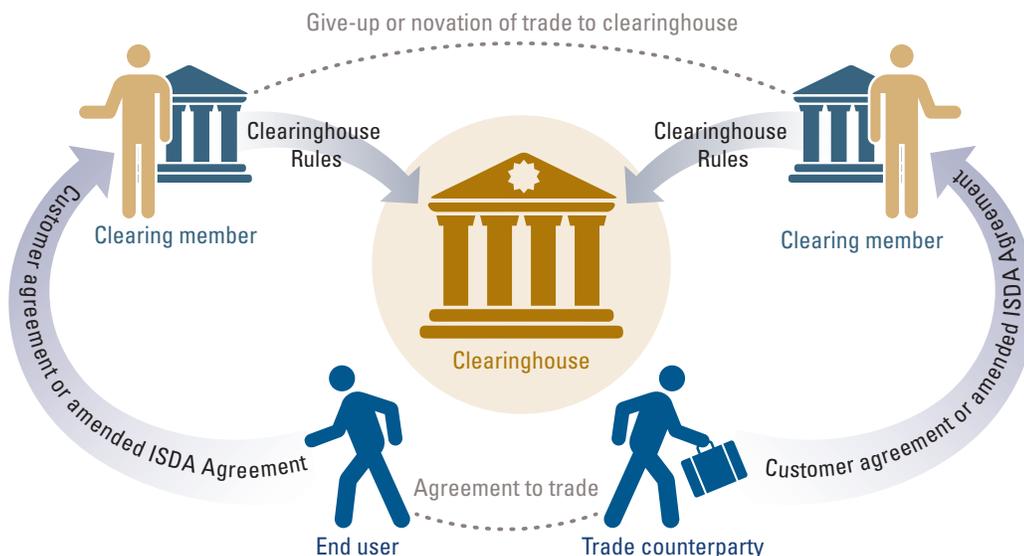
- ▶ **Reduced counterparty risk in all cleared contracts:** The CCP serves as a substitute counterparty and becomes the sole principal for each counterparty. As a result, the CCP takes market participants' trading exposures onto its own balance sheet, relieving the counterparties of multilateral risk exposures.
- ▶ **Multilateral netting:** CCP members are required to post both initial margin (IM) and variation margin (VM).<sup>43</sup> As the sole principal, the CCP can offset these payment obligations across multiple clearing members, only requesting their net amount. These netted obligations are generally much smaller, and acceptable collateral for margin requirements usually consists of high quality and liquid assets. Consequently, this multilateral netting process releases assets for participants to use elsewhere.
- ▶ **Centralized risk management:** By centralizing the margining process and collecting enough collateral, the CCP incorporates a sophisticated risk-management system that contains the exposures arising from trading positions.
- ▶ **Transparency and better price information:** The CCP has a well-informed price discovery mechanism based on a large number of derivatives trades. It also enhances system-wide price transparency by aggregating standardized data and making it available to other parts of the market.

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43. Margins are in the form of cash or other acceptable collateral, such as Treasuries or agency securities. The amount of an initial margin is based mainly on the clearing member's portfolio risk components and remains constant for a given portfolio allocation. Variation margin is marked to market to reflect revaluation of positions, and is calculated on a daily basis.

**FIGURE 14**

**CENTRALIZED CLEARING SUBSTITUTES THE CLEARINGHOUSE AS ONE OF THE PARTIES IN EACH TRADE**



Source: Milken Institute (2014).

With their enhanced importance in the financial system, CCPs and, more specifically their resilience, have become a major concern for market participants and for regulators. Accordingly, regulators have required the largest CCPs to follow a three-step assessment process. First, a systemically important CCP is identified and designated as a systemically important market utility (SIFMU). Second, the CCP is required to implement stress testing, and the results are evaluated by the regulator. Finally, the CCP must design a plan for recovery and orderly resolution. The stress tests are intended to detect vulnerabilities and improve the CCP's risk management, including required levels of capital and margin. The recovery and resolution planning helps to ensure the continuity of the trading system through a well-defined waterfall in the case of a CCP member default.<sup>44</sup>

This waterfall, as described in Table 2, is a multi-layer line of defense to contain losses if a counterparty defaults. It starts with the defaulter's prefunded resources, such as margins and default fund contributions. If these are not enough to cover the losses, the CCP can draw from its own capital and other CCP member banks' contributions to the default fund. Once these are exhausted, the CCP may call pre-agreed unfunded resources from non-defaulting members.<sup>45</sup> Finally, if these prove insufficient, the CCP has access to other loss-absorption tools, such as variation margin gain haircuts, that are applied not only to its members but also to their clients.

The backstopping afforded by multiple layers of loss absorption embedded in the waterfall is designed to make the CCP and its trading system more resilient in the event of a member's default. However, it is important to note that enhancing the resilience of CCPs is a necessary but far from sufficient condition to ensure financial stability, especially in time of systemic stress. The following section broadens our analysis to include system-wide considerations.

44. BIS and IOSCO (2016) provide guidance on how to implement the principles for financial market infrastructures for CCPs.

45. Other ex-ante funding arrangements with insurance companies exist. Insurance services for clearinghouses can be underwritten through such schemes as GCSA, a U.S.-based consortium of 20 insurance companies.

TABLE 2

## A CCP'S WATERFALL

Resources	Affected Parties	Layers of Protection
Prefunded	Defaulting Member	1: Initial Margins 2: Guarantee Fund
	CCP	3: CCP's Capital
Pre-Agreed Unfunded	Non-Defaulting Members	4: Guaranty Fund
	Non-Defaulting Members	5: Assessments
Other	Non-Defaulting Members Investors/Dealers	6: Variation Margin Haircutting/Initial Margin Haircutting

Source: Based on Office of Financial Research (2017).

## CCPs Have Spillover Effects that May Detract from Financial Stability

Macroprudential policy aims to mitigate risk to the financial system as a whole. Yet, most of the macroprudential assessment of new CCP regulations evaluate the individual CCP's resilience in isolation, without considering potential spillovers this new rule may have on the rest of the financial system. In other words, market participants' trading behavior and changes in their risk profile associated with mandatory central clearing for standardized OTC derivatives tend to be overlooked. That is because they may affect parts of the financial system outside derivative trading, and are often considered to be outside the purview of CCP regulators and supervisors.

However, ignoring such spillovers may lead to overly optimistic expectations when it comes to CCPs' ability to alleviate pressure on the financial system, especially in time of financial distress. We believe supervisors and regulators should implement procedures to supplement the work of CCPs, especially around three specific dimensions: pro-cyclicality of margin requirements; additional interconnections induced by CCPs among members and counterparties; and third-party exposures.

### Procyclicality of Mark-to-Market Margin Requirements Reduce Market Liquidity

More collateral to adequately pre-fund CCPs may reduce leverage in derivatives markets, but such required additions may worsen liquidity conditions elsewhere. Margin requirements may have destabilizing feedback effects in times of market distress: under these conditions, meeting margin requirements implies raising more collateral at a time when market conditions are already illiquid. *This would create a procyclical excess demand for liquid funds at a time when liquidity is scarce.*<sup>46</sup> More frequent trades cleared through a small number of CCPs using similar margining methods may exacerbate such phenomena.<sup>47</sup>

### Interconnections Induced by CCPs May Strain Banks' Ability to Meet Other Obligations

Variation margin dynamics can further impair funding liquidity: margin calls are marked-to-market and vary daily. They call for more collateral when asset values are declining. The ability to meet margin requirements depends strongly on the extension of credit by clearing members, as they

46. Brunnermeier and Pedersen (2009) argue that margin requirements dictate lower margins when the market is liquid and volatility is low, and higher margins during high volatility and illiquid market conditions.

47. Park and Abruzzo (2016) show that a margin model based on value-at-risk methodologies may understate the risk in normal conditions and amplify them in time of stress. Most large CCPs use these models. The Office of Financial Research (2017) provides an analysis of clearing members' concentration.

usually fund margin calls for their clients.<sup>48</sup> *In a period of extreme financial market stress, CCP members' need to extend credit competes with their obligation to provide collateral in the event of counterparty defaults, as mandated by the clearinghouse itself.*

These competing interests and obligations may place extra pressure on clearing members at the worst time because defaults often occur during, or can even be induced by, widespread illiquid conditions. Moreover, CCP members are mostly banks that are also the main liquidity providers for the rest of the financial system. Consequently, pro-cyclical margining and their CCP member responsibilities have the potential to hinder banks' ability to lend to other parts of the financial system, especially in times of already contracted liquidity supply.<sup>49</sup>

## Unanticipated Third-Party Exposure to CCP Failure May Worsen Market Conditions

The increasing systemic importance of CCPs raises questions about the balance between increasing capital to bolster CCPs' resilience to large shocks, and ensuring that CCPs have adequate resolution plans. When the backstop provided by the CCP waterfall is no longer credible, current CCP procedures imply the possibility of broadening the base for the CCP to raise funds to third parties (e.g., end users who are not CCP members). This view regards end-user balance sheets to be a public good that can (and should) be used to bolster a failing CCP in times of financial market stress. This is because the CCP is thought to provide such firms services and assurances of trade finality when market conditions are normal.

Furthermore, under the Dodd-Frank legislation, the recovery and resolution procedure for SIFMUs relies on discretionary behavior of a regulatory body (e.g., the FDIC), which decides on the criteria and procedures for reorganizing a failed institution. Such procedures include the arbitrary reallocation of credits and losses of the failed institution among its creditors, guided by the desire to ensure overall financial stability and the viability of the new entity.

However, such discretion under Dodd-Frank resolution procedures increases uncertainty and gives rise to market behaviors among non-CCP members (the end users) that worsen financial stability. Unlike clearing members, the end investors have no contractual relationships with the CCP beyond the finality of the trade for which the CCP is a counterparty. Without assurances of finality under a resolution process, third parties may want to sell their derivative holdings as soon as possible if the CCP's viability is questioned or if the waterfall is likely to be triggered.

The risks described in this section highlight the difference between micro- and macro-prudential policy: the former controls the risks within intermediaries while the latter looks at the impact one financial institution imposes on other institutions and markets. A broader mandate for CCPs may appear to improve micro- and macro-prudential conditions, but they may not reduce systemic risk because of unintended consequences of policies aimed at ensuring a CCP's survival. Such policies may be more destabilizing than swift and certain recovery and resolution procedures that restore market functioning quickly.

## Concluding Remarks: CCPs Have Limitations and Need Additional Macroprudential Policies to Assure Financial Stability

In their function as a sole principal for derivatives trades, CCPs provide several benefits—multilateral netting, collateralization, and collective loss mitigation. They also enhance transparency (in derivative markets) and encourage standardized derivative contracts.

While CCPs ensure related trades are settled and paid, it is less certain that the policies to improve their viability always strengthen overall financial stability. Indeed, many of the channels of risk transmission between CCPs and the financial system—direct and indirect—remain to be identified, following the changes induced by the new regulation requiring CCPs for derivative trading.

48. Banks provide credit lines to their clients in order to meet their variable margin obligations on a daily basis during the lifetime of the contract. Variable margins are mostly cash payments.

49. Pirrong (2014) provides several illustrations for this point.

It is extremely difficult to evaluate the impact on the overall financial stability of a stronger mandate for, or expanded use of CCPs. On the one hand, studies focusing on financial stability usually try to assess macroprudential policy changes holistically, often with a succession of “what if” scenarios presumed by the complexity of the financial system (Financial Stability Report 2016). On the other, most derivatives-centric analyses overlook the potential for spillovers from CCP operations and member obligations to affect other segments of the financial ecosystem.

In this note, we highlighted three dimensions of CCP operations that have undeniable potential to challenge overly optimistic expectations, especially in times of generalized financial distress: pro-cyclicality of CCP margin requirements; additional interconnections induced by CCPs among members and counterparties; and third-party exposures.

While addressing all of these risks may not be feasible, pursuing the following regulatory initiatives will be essential in mitigating their impact:

- ▶ **Procyclicality of margins:** the CPSS-IOSCO Principles for Financial Market Infrastructure require that margin models not be “overly” procyclical. The CFTC Risk Management Subcommittee (2016) suggests mitigating this risk by easing the financial burdens, where possible, for members that provide those margins during bad times.<sup>50,51</sup> While still very much a work in progress, some reforms, such as these, are needed to address the procyclicality problem.
- ▶ **Funding liquidity markets:** In the event of a member default, CCPs face immediate liquidity risks. Although many CCPs have arranged liquidity facilities, there is an element of “wrong-way risk” if the defaulting member is part of the liquidity facility.<sup>52</sup> Furthermore, the issue may not be inadequate margin collateral, but the inability for the CCP to provide timely payment to surviving clearing members, especially in the presence of systemic liquidity issues.<sup>53</sup> Consequently, when there is widespread financial distress, the central bank should step in as the lender of last resort and provide liquidity to CCPs, either directly or indirectly via CCP members, i.e., banks.
- ▶ **Resolution process:** A fast and certain recovery and resolution procedure of a failed CCP is essential. It would facilitate the CCP’s recapitalization and its ability to resume its function within the financial system. The Financial Institutions Bankruptcy Act of 2017, passed by the House, is a step in the right direction as it provides a set of clear and transparent rules to follow.

Finally, clearing performs best when the financial products being cleared are traded in deep and liquid markets, and with standardized contracts. Expanding the current centralized framework to trading in complex and illiquid non-standardized OTC derivatives may lead CCPs to take on risks they cannot safely manage or that require CCP members to provide unaffordable levels of collateral or liquidity.<sup>54</sup> This is another example of how reducing risk (and possibly leverage) in one market (in this case, OTC derivatives) may not automatically improve overall system-wide financial stability.

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50. In order to reduce the burden, the subcommittee also recommends allowing the non-defaulting members to rely on the defaulting members’ assessments of their customers, known as “KnowYour Customer” (KYC) practice, when servicing defaulting member’s portfolios.
  51. CCP Risk Management Subcommittee Final Recommendations (2016) suggest a “temporary relief from capital requirements for the non-defaulting clearing member could help alleviate the risk of the trades and collateral moving at different times making portability more likely.”
  52. That is, the exposure to a counterparty is not independent from the credit quality of that counterparty but is negatively correlated, based on the International Swaps and Derivatives Association (ISDA)’s definition.
  53. Cox and Steigerwald (2017) discuss this point.
  54. In February 2017, however, the CFTC delayed the implementation of its Dodd-Frank variation margin (VM) rules that require financial counterparties to collateralize mark-to-market exposure to over-the-counter (OTC) derivatives that are not centrally cleared by a registered clearinghouse.

## References

- Baker, Colleen. 2016. "Clearinghouses for Over-the-Counter Derivatives." Volcker Alliance working paper.
- BIS and IOSCO. 2016. "Resilience and Recovery of Central Counterparties (CCPs): Further Guidance on the PFMI." Committee on Payments and Market Infrastructures and Board of the International Organization of Securities Commissions consultative report, August.
- BlackRock Viewpoint. 2016. "Resiliency, Recovery, and Resolution: Revisiting the 3 R's for Central Clearing Counterparties." October.
- Brunnermeier, Markus K. and Lasse Heje Pedersen. 2009. "Market Liquidity and Funding Liquidity." *Review of Financial Studies* 22(6): 2201-2238.
- Financial Stability Report. 2016. "Proposed Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities." Consultative document, June.
- Commodity Futures Trading Commission (CFTC). 2016. "CCP Risk Management Subcommittee of the Market Risk Advisory Committee of the CFTC." Commodity Futures Trading Commission memorandum, November.
- Cox, Robert T. and Robert S. Steigerwald. 2017. "A CCP Is a CCP Is a CCP!" *Federal Reserve Bank of Chicago Policy Discussion Papers* PDP-2017-01, April.
- Domanski, Dietrich, Leonardo Gambacorta and Cristina Picillo. 2015. "Central Clearing: Trends and Current Issues." *BIS Quarterly Review*, December 2015: 59-76.
- Heckinger, Richard, David Mengle, Robert Steigerwald, Ivana Ruffini, and Kirstin Wells. 2013. *Understanding Derivatives: Markets and Infrastructure*. Federal Reserve Bank of Chicago.
- Financial Institution Bankruptcy Act of 2017, H.R.1667.
- Milken Institute. 2014. "Deriving the Economic Impact of Derivatives: Growth through Risk Management.
- Park, Yang-Ho and Nicole Abruzzo. 2016. "An Empirical Analysis of Futures Margin Changes: Determinants and Policy Implications." *Journal of Financial Services Research* 49 (1): 65-100.
- Pirrong, Craig. 2014. "A Bill of Goods: CCPs and Systemic Risk." *Journal of Financial Market Infrastructures* 2(4), 55-85.
- OFR. 2017. "New Public Disclosures Shed Light on Central Counterparties." *Viewpoint*, March.

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