

NOVEMBER 2017

# Beyond Unintended Consequences:

Changes to Foreign Branch Behavior Illustrate Overlooked System-Wide Regulatory Effects

Jakob Wilhelmus and Jonathon Adams-Kane

ACCESS TO  
CAPITAL



MILKEN INSTITUTE

# 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>1</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>2</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

---

<sup>1</sup> While bank holding companies are by far the largest group, the Federal Reserve regulates a multitude of financial institutions; see Federal Reserve System (2015).

<sup>2</sup> 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).

## Introduction

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>3,4</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 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.

---

<sup>3</sup> 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.

<sup>4</sup> 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).

# Compound Effects

## 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>5</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>6</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>7</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>8</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 1.a.) This arbitrage resulted in an unusual situation in which foreign branches held 50 percent of all reserves at the Fed. (See Figure 1.b.)<sup>9</sup>

---

<sup>5</sup> For a more detailed introduction to the changes regarding reserves at the Federal Reserve and monetary policy, see Bowman, Gagnon, and Leahy (2010).

<sup>6</sup> 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.

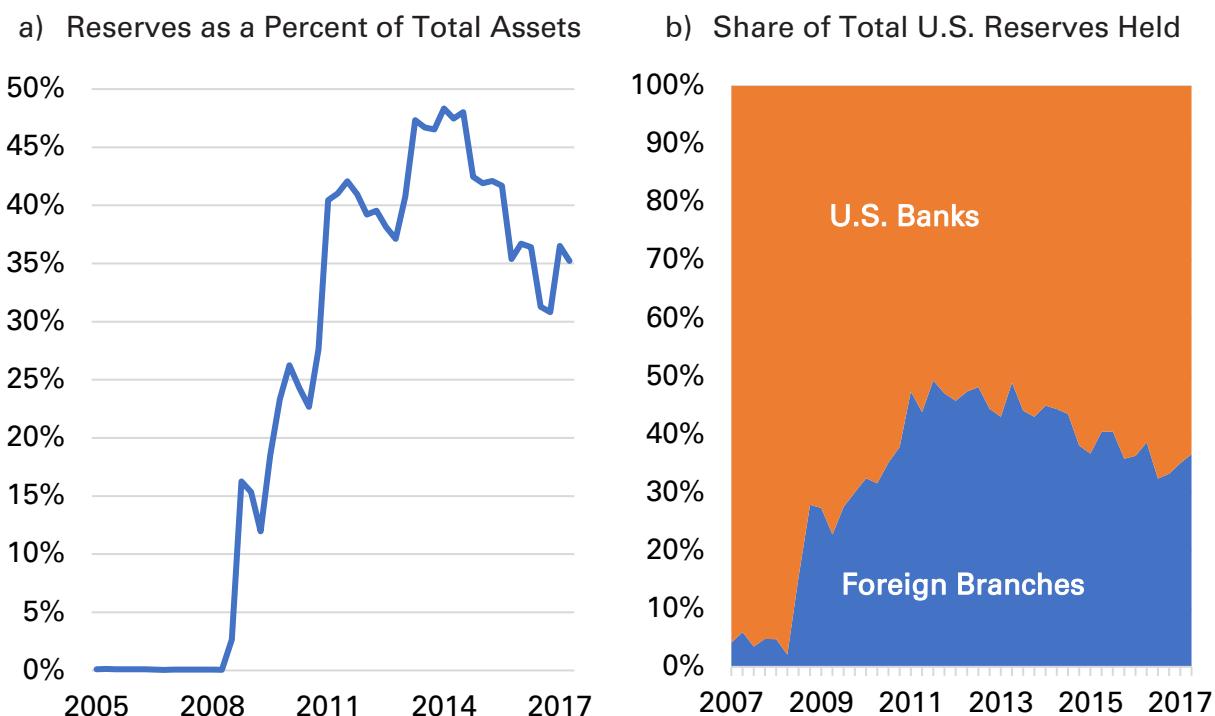
<sup>7</sup> The base of the FDIC deposit insurance premium changed from a given bank's insured deposits to its total assets minus capital. This implied that balance sheet expansion via nondeposit sources of funding was now more expensive for banks with FDIC insured deposits—i.e., all domestic US banks. For more details, see *Federal Register* 76, no. 38 (February 25, 2011): 10671-10733.

<sup>8</sup> 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.

<sup>9</sup> Goulding and Nolle (2012).

# Compound Effects

Figure 1. Foreign Banks' U.S. Branches: A Change in Business Model



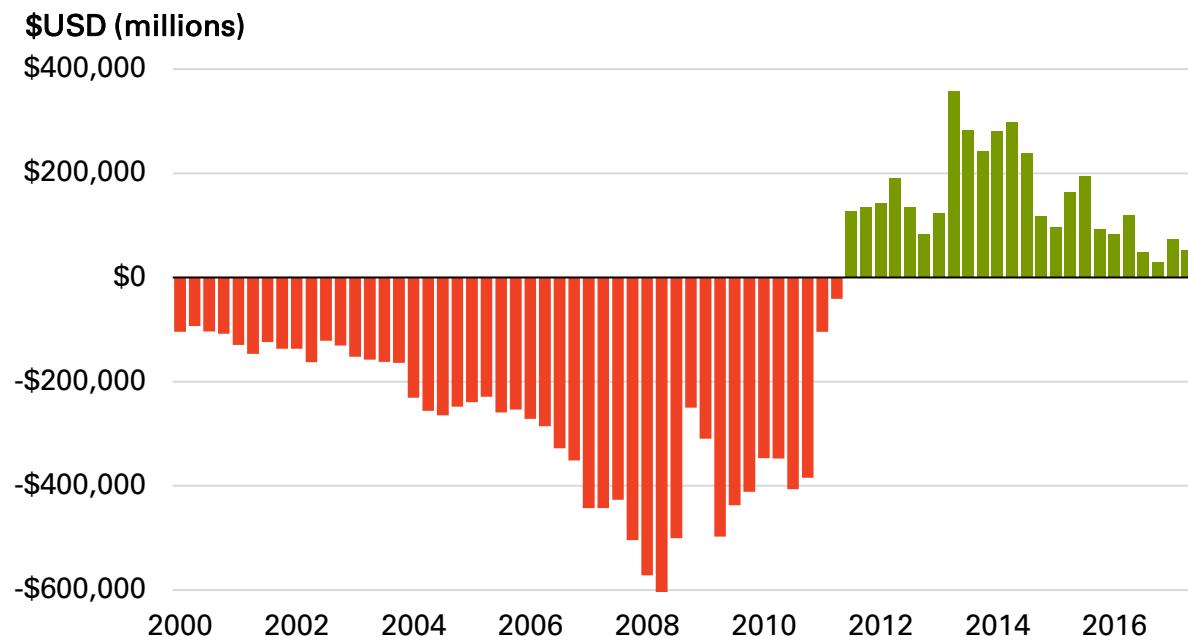
Source: Federal Reserve.

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. (See Figure 2.) 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

## Compound Effects

via their parent banks, foreign banks increased their direct use of wholesale funding from the U.S. onshore market.<sup>10</sup>

**Figure 2. 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.<sup>11</sup>

The scarcity of bank funding from anticipations of these reforms started as early as 2014 when the SEC initially proposed the changes. (See Figures 1.a and 2.) Domestic banks found an alternative source of funding by increasing their reliance on loans from the Federal Home Loan Banks.<sup>12</sup> Foreign branches did not have that option but nonetheless

<sup>10</sup> 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.

<sup>11</sup> Wilhelmus and Adams-Kane (2017).

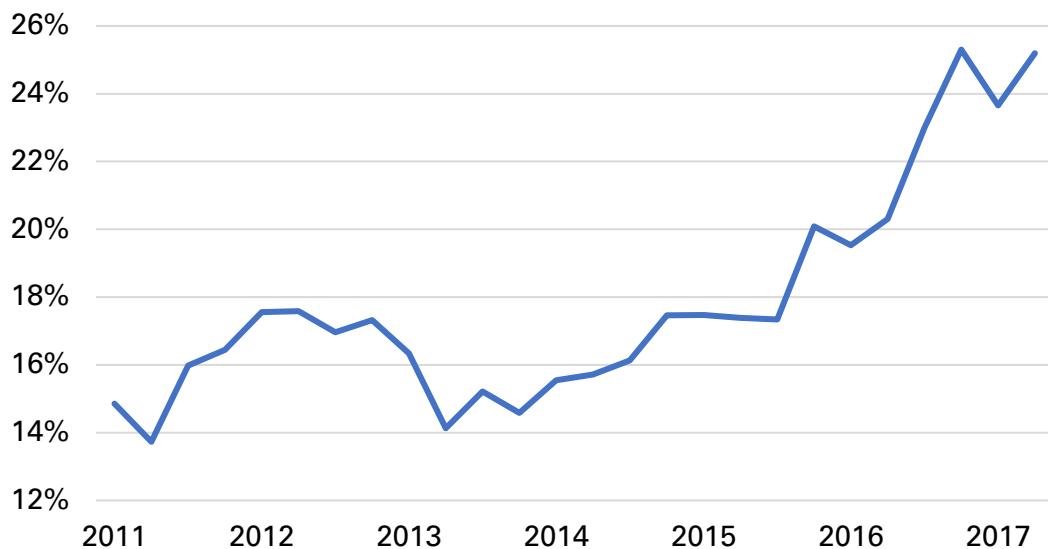
<sup>12</sup> Adams-Kane and Wilhelmus (2017).

## Compound Effects

had to accommodate an aggregate withdrawal of \$350 billion from their parent banks. (See Figure 2.)

Consequently, 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 3.) 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 1.a.)<sup>13</sup>

**Figure 3. Foreign Banks' U.S. Branch Reliance on Repurchase Agreements**



*Source: Federal Reserve.*

<sup>13</sup> Aldasoro et al. (2017).

# Conclusion

Although foreign branches were not the intended target 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, general manager of the Bank for International Settlements, recently remarked:

*"[T]he 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."* (Caruana, 2017)

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.<sup>14</sup>

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."<sup>15</sup> Such a systematic reassessment appears quite timely given the Fed's strong signal toward an approaching normalization of its balance sheet.<sup>16</sup> 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.

---

<sup>14</sup> Lopez, Markwardt, and Savard (2015).

<sup>15</sup> U.S. Treasury (2017a,b).

<sup>16</sup> Federal Open Market Committee statement, Sept. 20, 2017.

# 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 Ehlers, 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, September 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*, June 2017(a).

## References

U.S. Department of the Treasury. *A Financial System That Creates Economic Opportunities: Capital Markets*. Washington, DC: 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.

# ABOUT US

## ACKNOWLEDGMENTS

The authors would like to thank William Lee, Claude Lopez, and Elham Saedinezhad for their useful comments. The views expressed here are those of the authors and do not necessarily reflect the view of the Milken Institute or its affiliates. This paper was approved to distribute by William Lee, chief economist at the Milken Institute.

## ABOUT THE AUTHORS

Jakob Wilhelmus is a senior research analyst in international finance and macroeconomics at the Milken Institute. Concentrating on data-driven analytics, his work focuses on topics relating to capital markets and systemic risk. He is also involved in organizing Institute conference sessions aimed at bringing regulators and market participants together to exchange views.

Dr. Jonathon Adams-Kane is a research economist with the international finance and macroeconomics team at the Milken Institute. His research is mainly on international capital flows and financial stability, with a focus on analyzing structural changes in the international financial system, how crises spread among countries through international banking, and how financial crises affect firms and households.

## ABOUT THE MILKEN INSTITUTE

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.

©2017 Milken Institute

This work is made available under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License, available at [creativecommons.org/licenses/by-nc-nd/3.0/](http://creativecommons.org/licenses/by-nc-nd/3.0/)