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Promise and peril: Managing the uncertainty of rapid innovation and a changing economy

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The Chicago Fed's Supervision and Regulation Department and DePaul University's Center for Financial Services held their tenth annual risk conference on March 29–30, 2017. The conference brought together financial industry professionals, academics, and regulators to discuss the rapid pace of technological innovation in financial services, as well as the uncertainty of the changing economy through the lens of risk management.[1]

Innovation, disruption, and transformation are words that have been used to describe the rise of financial technology, or "fintech." While there is no single definition of fintech, many in the financial services industry agree that fintech firms approach challenges to traditional banking from the perspective of engineering and technology—specifically, as problems that can be addressed through a combination of high-quality data and automation. Fintech solutions can improve efficiency and lower costs (e.g., those for underwriting loans and processing payments) and also often permit those underserved by traditional banks to gain access to financial products and services. Many argue that fintech will significantly shape the way financial institutions around the world operate in the future. However, numerous fintech developments in recent years face their own set of risks, which raises interesting questions for regulators and lawmakers. This conference addressed the state of the global fintech industry, the drivers of emerging technologies and their growth, and the different relationships between fintech and more-traditional financial services firms. Discussion centered on fintech-specific initiatives launched by international and domestic regulators in response to recent innovations. The conference also addressed the changing U.S. economy and implications for risks and regulation in the banking sector.

The conference agenda and some materials presented at the event are available online, https://www.chicagofed.org/events/2017/risk-conference.

Fintech regulation: An international perspective

Governments around the world are forming regulations and guidelines to support financial innovation while upholding principles of risk management. In the opening keynote address, John Schindler, associate director, Board of Governors of the Federal Reserve System, provided an overview of the fintech industry and the variety of ways that international agencies are addressing the regulation

and supervision of the industry. Schindler compared financial innovation with the construction of a building, in which some innovations change the foundation while others change the superstructure. Fintech is transformative because it has a greater capacity to change the financial system than other innovations in the past, he said. Schindler explained that the advent of blockchain—a decentralized digital ledger—is an example of a foundational change that leads to new applications, such as digital currencies and smart contracts.[2]

As fintech companies innovate, regulatory agencies are tasked with supervising the evolving industry, noted Schindler. Because of the fintech industry's potential to rapidly alter the financial system, over 20 countries have actively facilitated fintech innovation or provided regulatory guidance to this industry by clarifying how new and existing rules apply. In an effort to promote financial inclusion, market integrity, financial stability, and investor and consumer protections, regulatory bodies have taken actions such as implementing licensing requirements, restricting activities, and requiring specific minimum technological standards. Not all countries are taking regulatory action, as some consider current regulations to be sufficient. However, all authorities within the U.S., including the Consumer Financial Protection Bureau (CFPB), Federal Deposit Insurance Corporation (FDIC), Federal Reserve System, Office of the Comptroller of the Currency (OCC), and Securities and Exchange Commission (SEC), are researching fintech developments and the potential implications for financial supervision, said Schindler.

Fintech regulation: A domestic perspective

U.S. regulatory agencies have different perspectives regarding how to approach the advancements in financial technology. Amy Friend, senior deputy controller and chief counsel, OCC, provided the agency's perspective on responsible innovation in financial services and reaffirmed its commitment to regulatory engagement with fintech companies. She indicated that the OCC's view is that emerging technologies have the potential to increase efficiency in the financial sector, improve the customer experience, and expand products to underserved consumers.

Friend emphasized that the OCC has a mission to maintain the safety and soundness of the banking system while promoting fair access to financial services. She also underscored that financial innovation lacking proper risk management or supervisory guidance could lead to problems. In recognition of the potential risks, the OCC developed a framework in the first of three white papers pertaining to responsible financial innovation, which the agency published in March 2016.[3] The document outlines eight principles, including the broad goal of supporting responsible financial innovation by way of the OCC's existing resources, but without undermining its mission to protect the financial system. To further engage relevant stakeholders, the OCC established its Office of Innovation to bring together other regulators and companies to encourage an open forum for exchanging ideas.[4]

According to Friend, the OCC's efforts culminated in the agency proposing a special-purpose national bank charter for fintech companies.[5] The OCC identified benefits in establishing more-uniform standards for emerging fintech companies as an alternative to the 50 state-level sets of regulations. Friend pointed out that any current law or regulation guiding financial companies would apply to fintech firms holding the special-purpose charter.

Blockchain technology: Redefining ledgers for financial transactions

During a panel on blockchain and its applications, industry professionals discussed the technology's origin and its future potential. Many users think of blockchain as the technology behind bitcoin. Jill Carlson, partner lead with blockchain company Chain, described this genesis of the technology as a solution to a decades-old problem: how to digitally transfer value without making a copy. She noted that even an email or a website post will create a digital copy of the underlying transaction. Blockchain technology aims to solve the classic "double spend" problem, which is the risk that a

digital asset can be spent twice.[6] Other promising applications of blockchain are quickly being developed in the financial industry as well. Lamont Black, assistant professor of finance, DePaul University, described blockchain as "accounting on the cloud," a ledger connected through a network that provides transparency while managing debits and credits.

The World Economic Forum's 2016 report on the future of financial infrastructure estimated that 80% of banks will initiate distributed ledger technology by 2017.[7] Mike Srdanovic, vice president, Northern Trust, noted that his firm is beginning to utilize blockchain on account of the technology's value in safeguarding assets. Srdanovic's comments referenced a current Northern Trust initiative to grant access via a blockchain network to authorized personnel for managing a private equity fund.[8]

Kathy Wang, senior financial services analyst, Board of Governors of the Federal Reserve System, said that there are still many inefficiencies in the legacy payment system in the U.S. that could be improved. Wang indicated that blockchain technology may prove to be a more efficient way to track payments, but there will always be risks involved, and noted there will continue to be a need for checks and balances that would slow even a new blockchain-based system down.

Charley Cooper, managing director of distributed ledger company R3, commented that the best applications for blockchain in the banking sector are for parts of the system customers do not normally think about, primarily its underlying "plumbing." Cooper added that since the distributed blockchain network is the sum of network nodes, everyone can see the same thing at the same time (improving transparency).

Is blockchain the panacea for solving the recordkeeping challenges of the financial industry? Many industry experts argue the technology has already provided useful advances in recordkeeping; however, the feasibility of other blockchain applications, like the signing and recording of legal documents in traditional public registries, remains unclear, according to the panelists.

Digital currency: Sweden explores its own virtual currency

In her keynote address, Cecilia Skingsley, deputy governor, Sveriges Riksbank, discussed the recent announcement that the central bank of Sweden is exploring issuance of an "e-krona" as an electronic means of payment. This would make Sweden the first major country to give consumers direct access to virtual money issued by a central bank. Skingsley noted the intention of the e-krona would not be to replace Swedish bank notes and coins, but rather to complement the existing monetary unit of Sweden, the krona.

Skingsley said Sweden is quickly becoming a cashless society; consequently, there's been a weakening in demand for paper currency. While cash is not considered a direct monetary policy tool, a decline in its use could potentially negatively impact the Riksbank by reducing the central bank's significance in the payment system. Hence, the use of the e-krona is being explored now. The Riksbank is considering whether the e-krona would require accounts, if it should be issued directly to the public or via banks, and whether or not the e-krona should earn interest. Over the course of the two-year project, Sweden's central bank will explore the use of potential technologies for payment initiation; potential effects on economic policy; consequences for the financial system; and related legal issues. It remains uncertain at this time if the e-krona will be officially introduced across Sweden, but Skingsley concluded by emphasizing the importance of fostering innovation, as technological advances create new opportunities.

Fintech lenders: Expanded credit access, new regulatory issues

Fintech innovations in consumer and small business lending have improved access to credit as well as efficiencies in financial intermediation from both the borrower's and lender's perspectives.

However, these innovations also create potential compliance and regulatory issues. A panel on small business and consumer lending composed of fintech lenders, bankers, and regulators discussed current business models, possible future trends, risks arising for lenders and banks, and how these risks can be managed.

Evidence was presented suggesting online lenders have the ability to reach more communities and offer unique loan products that increase access to credit and reduce the time required to approve small business and consumer loans. By partnering with banks, PayPal leveraged its infrastructure and data to launch Working Capital, a platform that provides financing in minutes to its network of 15 million merchants, explained Usman Ahmed, head of global public policy, PayPal. PayPal found that Working Capital financing went to the places hardest hit by the financial crisis. About 25% of loans currently go to counties where ten or more bank branches closed. Research into the online lender LendingClub, conducted by Cathy Lemieux, executive vice president, Federal Reserve Bank of Chicago, and Julapa Jagtiani, special advisor, Federal Reserve Bank of Philadelphia, shows a similar trend. LendingClub makes loans both in areas where bank branches have declined and in highly concentrated banking markets, increasing access to credit. Lemieux also referenced other conclusions from the research, including that the information LendingClub uses to price loans, a mix of traditional measures (such as FICO consumer credit scores) and proprietary data, enables the company to provide credit to more borrowers at a lower cost. Other panel participants described how fintech can allow for greater speed in providing credit. For instance, Gilles Gade, CEO, Cross River Bank, explained how his bank's infrastructure allows for immediate funding after a loan is approved, even on weekends.

> Fintech innovations in consumer and small business lending have improved access to credit as well as efficiencies in financial intermediation from both the borrower's and lender's perspectives. However, these innovations also create potential compliance and regulatory issues.

According to some panelists, small lenders are poised to drive innovation in online lending, partly because their size provides the agility to bridge the banking industry and the tech world. Michael Busch, president, Burling Bank, engaged Akouba, a company that specializes in software for regional and community banks, to provide the technical infrastructure to underwrite and originate small business loans in order to extend the bank's reach. The most significant challenge for his bank was finding a tech partner that understood community banking and the regulatory environment. Burling executives required that the platform not be a black box, so the bankers could maintain control of the process, especially over credit decisions.

Gade said he views Cross River Bank's understanding of the regulatory environment as an asset that is integral to its success as an online lender. He noted that fintech firms need the banking industry to lend credibility to online lending, as banks are better equipped to navigate the regulatory environment and payment system. Joseph Smith, group leader for the Credit and Market Policy Group, OCC, echoed that view. He indicated that the fundamental principles of lending remain important even for new fintech platforms. Moreover, Smith said that sound modeling practices and risk analysis are critical for ensuring safe lending practices using fintech.

Robo-advisors, plus data control and security: Transformative models create new opportunities and risks

A panel made up of industry experts, a financial regulator, and a nonprofit consumer advocate weighed in on the impact, risks, and promise of technology, including robo-advisors, in wealth and personal financial management. Panel moderator Andre Reynolds, vice president, Supervision and Regulation, Federal Reserve Bank of Chicago, noted that such technology is transforming the

way we think about activities traditionally delivered by humans. The panelists agreed that this technology is having a growing impact, especially on business models targeted for the "mass affluent" segment. Consumers are now able to use technology to manage their finances, wealth, and investments outside of brick-and-mortar financial institutions—and without a human investment advisor. Mark Goines, vice chairman of digital wealth management, Personal Capital, noted that the business models of traditional financial industry participants are expanding to include digital solutions. Banks are discovering that partnering with fintech firms allows them to provide services to consumers in a more efficient and cost-effective manner. Echoing this sentiment, Randy Rivera, senior vice president of client and business development, BBVA Compass, explained that his institution is embracing developments in the industry by investing dollars in and partnering with fintech firms.

The advent of technological innovation in financial services and wealth management has given rise to third-party fintech providers, the panelists observed. The tools these providers offer can be utilized to help consumers control spending, budget, save for retirement/college, and receive investment advice. While this technology is teeming with opportunity, it is not without risks and pitfalls. As robo-advisor entities such as Digit and Mint play a larger part in consumers' daily financial planning and wealth management, questions regarding data control and security are abundant. Specifically, access to consumer data has been a hot topic as industry players and regulators attempt to establish policies for ownership, security, and dissemination in a nontraditional space.

The Consumer Financial Protection Bureau, pursuant to section 1033 of the Dodd–Frank Act, has put out a formal request for information regarding consumer access to financial records to find out how easy and secure it is for people to share their personal data with third parties.[9] Gary Stein, deputy assistant director of the Office of Cards, Payments, and Deposits Markets, CFPB, asserted that consumers have a right to access personal data in a way that enables them to take full advantage of the array of digital wealth and financial management tools. Largely in agreement with Stein, Jennifer Tescher, president and CEO, Center for Financial Services Innovation, laid out five consumer data principles resulting from a working group composed of consumer advocates, bankers, and independent fintech company representatives: 1) data have to be available, in that consumers must have the ability to view their financial information through a third-party service of their choice; 2) data access has to be reliable, consistent, accurate, complete, and timely; 3) there must be explicit user consent for data access; 4) the process must be secure; and 5) data retention should be limited to the application's functionality and stored for a minimum amount of time to accomplish the requisite task.[10]

The general consensus among the panelists was that consumers have a right to access their financial information and share it with whomever they wish. Incumbent financial firms, however, raise concerns about security and data integrity, particularly as consumers grant third parties access to their user names and passwords for banking products. Rivera highlighted the dilemma that traditional financial institutions face: Banks have a fiduciary responsibility to protect clients' information, but in a way that still fosters innovation. These issues are further complicated by intermediaries such as data aggregators and brokers, which move and store consumer data outside of consumers' view. Tescher brought the discussion to a close by questioning who is paying attention to data aggregators given the important intermediary role that they play.

The U.S. payment system: A need for speed

The keynote address during the second day of the conference was delivered by Loretta Mester, president and CEO, Federal Reserve Bank of Cleveland. Mester's remarks focused on the evolving demand for new payment technologies and how current U.S. payment system capabilities fall below the expectations of consumers and businesses while also trailing the capabilities of payment systems around the world. In response, the Federal Reserve led an initiative to improve the U.S. payment system in collaboration with several industry and consumer stakeholders.

The Federal Reserve System's Faster Payments Task Force and Secure Payments Task Force, both made up of a broad array of representatives with an interest in payment systems, commenced in 2015 and worked on proposing solutions to achieve the initiative's goals. Mester referenced the Faster Payments Task Force's January 2017 publication, *The U.S. Path to Faster Payments—Final Report Part One: The Faster Payments Task Force Approach*,[11] discussing specifically its mission and the desired characteristics of a faster payment system. As Mester mentioned, *The U.S. Path to Faster Payments—Final Report Part Two: A Call to Action,*[12] released in July 2017, includes recommendations for ongoing collaboration to address challenges related to 1) governance and regulation, 2) infrastructure, and 3) sustainability and evolution.

In her closing comments, Mester emphasized the Federal Reserve's commitment to "facilitating collaborative efforts with payment stakeholders to foster the move to a faster, secure, efficient, and ubiquitous payments system in the U.S. on behalf of the public."[13]

Post-financial crisis: On the road to recovery

The banking and risk panel, made up of banking industry professionals and senior supervisors, reflected on the industry's post-crisis challenges, achievements, and innovations. Jennifer Burns, executive vice president, Federal Reserve Bank of Richmond, pointed to multiple challenges that banks have faced. Burns noted that the low interest rate environment and slow economic growth in the wake of the financial crisis have been difficult for many banks. After concurring with Burns, Christopher Finger, associate director, Board of Governors of the Federal Reserve System, explained that another challenge from a supervisory perspective is the continuing engagement with foreign financial regulators. U.S. agencies are currently working with regulators worldwide to ensure that responses to the financial crisis are implemented consistently across markets. Creating a more level regulatory playing field for the international banking industry was key to maintaining global financial stability, Finger noted. Finger suggested that as banks recover from the crisis, the regulatory arena is now more rational in method and approach.

Cecily Mistarz, U.S. chief risk officer, BMO Financial Group, reflected on her firm's biggest challenges as well as those of the industry as a whole. Mistarz explained that after the crisis, BMO focused on retrieving data, building data infrastructure, and constructing a cross-organizational method to monitor risk. Justin Fuller, senior director of the Financial Institutions Group, Fitch Ratings, described the balance that firms must strike between building a sound internal risk-management structure and maintaining efficiency in the post-crisis environment.

Former U.S. Bancorp CEO remarks: A view from the corner office

In closing, the final keynote speaker Richard Davis, then-CEO, U.S. Bancorp,[14] provided his view from the corner office. Davis said he views the fintech movement as a complement to the banking industry rather than as a threat and U.S. Bancorp is open to exploring partnerships with fintech firms. He also emphasized the need for partnerships among the regulatory agencies as technology evolves. Financial institutions that foster a culture of innovation, risk management, and collaboration will be better prepared for the opportunities and challenges of a quickly changing economy, he said.

Conclusion

The conference highlighted the rising use of fintech, its transformative potential for financial services, and the need for traditional financial services firms to strategically address the implications for risk management. Fintech firms are creating new market dynamics as companies of all sizes take advantage of emerging networks and platform-based services—ultimately lowering loan underwriting and other costs, increasing access to financial services and products, and enhancing customer

convenience. Regulators will have to consider, and ultimately respond to, the risks associated with the growing use of new financial technologies. Meanwhile, the financial services industry continues to be challenged by a wide array of new technological and competitive pressures, heightened uncertainty, and formidable new risks, such as those related to cybersecurity. Firms will need to strategically find ways to successfully operate in this new dynamic environment.

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[1] Across the financial system, professionals who work in risk management are charged with monitoring, identifying, and addressing threats—from traditional ones (e.g., default risks of loans made to consumer and business borrowers and risks related to business strategy decisions) to relatively newer forms (e.g., cyberattacks and risks associated with online lender and payment processor partnerships).

[2] A primer explaining the digital currency bitcoin and the blockchain is available online, https://www.chicagofed.org/publications/chicago-fed-letter/2013/december-317. Smart contracts are coded programs used to automate prespecified transactional events based on agreed-upon contractual terms; more details are available online, https://www.federalreserve.gov/econresdata/feds/2016/files/2016095pap.pdf.

[3] Available online, https://www.occ.gov/publications/publications-by-type/other-publications-reports/pub-responsible-innovation-banking-system-occ-perspective.pdf.

[4] Details on the OCC's Office of Innovation are available online, https://www.occ.treas.gov/topics/responsible-innovation/index-innovation.html.

[5] Available online, https://www.occ.gov/topics/responsible-innovation/comments/special-purpose-national-bank-charters-for-fintech.pdf.

[6] For an in-depth discussion of this problem, see the first reference in note 2.

[7] Available online, http://www3.weforum.org/docs/WEF_The_future_of_financial_infrastructure.pdf.

[8] Available online, https://www.northerntrust.com/about-us/news/press-release?c=70b5ba1adc9928f9977162844c34f57a.

[9] Available online, https://www.consumerfinance.gov/about-us/newsroom/cfpb-launches-inquiry-challenges-consumers-face-using-and-securely-sharing-access-their-digital-financial-records/.

[10] Available online, https://s3.amazonaws.com/cfsi-innovation-files/wp-content/uploads/2017/01/19195017/2016-Consumer-Data-Sharing-CDAWG-One-pager-Final.pdf.

[11] Available online, https://fedpaymentsimprovement.org/wp-content/uploads/path-to-faster-payments.pdf.

[12] Available online, http://fasterpaymentstaskforce.org/wp-content/uploads/faster-payments-task-force-final-report-part-two.pdf.

[13] The full speech is available online, https://www.clevelandfed.org/en/newsroom-and-events/speeches/sp-20170330-updates-on-the-economy.aspx.

[14] Richard Davis stepped down as U.S. Bancorp CEO shortly after this year's conference.

Charles L. Evans, *President*; Daniel G. Sullivan, *Executive Vice President and Director of Research*; David Marshall, *Senior Vice President and Associate Director of Research*; Spencer Krane, *Senior Vice President and Senior Research Advisor*; Daniel Aaronson, *Vice President, microeconomic policy research*; Jonas D. M. Fisher, *Vice President, macroeconomic policy research*; Robert Cox, *Vice President, markets team*; Anna L. Paulson, *Vice President, finance team*; William A. Testa, *Vice President, regional programs, and Economics Editor*; Helen Koshy and Han Y. Choi, *Editors*; Julia Baker, *Production Editor*; Sheila A. Mangler, *Editorial Assistant*.

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