

## Payments System Research: Our 2020 Vision

*By Susan Zubradt*

*In this year's first Payments System Research Briefing, senior vice president Susan Zubradt reflects on the evolution of retail payments and what lies ahead for the KC Fed's Payments System Research group.*

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Twenty years ago, little research and scant data were available on retail payments. As more retail payments were processed electronically, questions about access, competition, innovation, and payments security risks became more pronounced. Given this changing environment, in 1999 the Federal Reserve Bank of Kansas City established a Payments System Research group to analyze domestic and international payments systems and identify risks and trends. In 2001, the Federal Reserve System also conducted the first in a series of triennial studies to gain a better understanding of the dynamics of the retail payments system.

The 2001 Federal Reserve Payments Study revealed that the total number of noncash retail payments had nearly doubled over the last 20 years, from approximately 37 billion in 1979 to nearly 73 billion in 2000. While noncash payments were still dominated by paper, check share had declined from approximately 85 percent to about 60 percent during the same period. In 2000, credit cards represented 22 percent of noncash payments, debit cards 11 percent, and Automated Clearing House (ACH) payments less than 10 percent (Federal Reserve System 2004).

Two decades later, the composition of retail payments has changed significantly. The most recent Federal Reserve Payments Study revealed that among the 174 billion noncash payments made in 2018, more than three-quarters were card payments, including credit, debit, and prepaid cards (Federal Reserve System 2019). ACH payments represented 16 percent, about twice as much as check payments. In addition, the Federal Reserve Bank of Atlanta's 2018 Diary of Consumer Payment Choice found that debit cards had replaced cash as the payment instrument used most frequently by consumers (Greene and Stavins 2019).

While consumer adoption and merchant acceptance of payment cards were significant drivers of the shift from paper-based to electronic payments, the evolution of retail payment methods also contributed to the shift. Nacha (formerly the National Automated Clearing House Association) introduced several electronic check Standard Entry Class Codes that used information from a check's magnetic ink character recognition line to create an ACH transaction. The Check 21 Act provided additional options for processing image-based payments.<sup>1</sup> More recently, a shift has also begun to speed up payments. Nacha implemented Same Day ACH in 2016, enabling ACH payments to be sent and processed on the same day.<sup>2</sup> The Clearing House, a banking association and payments company owned by 24 of the largest U.S. banks, introduced the Real-Time Payments (RTP) network in 2017, and the Federal Reserve is currently developing a real-time clearing and settlement service called FedNow. Card networks such as Visa and Mastercard have also introduced services that facilitate faster funds transfers.

Technology has been pivotal to the changes in retail payments. The internet and smartphone have enhanced the connectedness of payments and changed how, when, and where payments can be made. Payments that were once limited to cash or check may now be electronic. Apps like Square Cash, Venmo, and Zelle facilitate mobile person-to-person payments, while PayPal and others facilitate person-to-small business payments that support the gig economy. Although technology has provided a new front end for initiating payments, these methods still rely heavily on the ACH and card networks to facilitate payments on the back end. In the last decade, new forms of retail payment methods such as digital currencies have emerged, and they rely on technologies such as blockchain, distributed ledger, and cryptography, which have changed the underlying payment process. In addition, technologies like machine learning and artificial intelligence have been adopted for payment fraud prevention and detection.

Just as payments have evolved, so have participants. In the early 2000s, nonbanks played a role mainly in the back-office processes of financial institutions. However, they later became more prominent on the front end of services, both in traditional and emerging payment services. In the 2010s, different types of fintech firms flourished and now play various roles in the retail payments ecosystem. As we enter this new decade, attention is on Big Tech firms like Facebook, Amazon, and Google as they look to leverage expansive data about their customers as well as provide various financial services.

Consolidations, acquisitions, and partnerships have been a constant. In the early 2000s, consolidation of ATM and debit card networks garnered attention as debit card adoption grew; the last decade ended with several acquisitions among large payment processors. Large incumbent companies, such as card networks, have been making a series of acquisitions of fintech firms to enhance or extend their service offerings. In addition, financial institutions have partnered with fintechs, often to explore innovations for business-to-business payments, which heavily comprise the remaining paper checks.

The landscape of payment security has also changed significantly. As retail payments become more sophisticated, so do fraudsters. In the last several years, payment card fraud has shifted from the in-person to the remote payment environment. New types of fraud, such as synthetic identity fraud and authorized push payment fraud, have caused increasing concern.<sup>3</sup> The numbers of data breaches and exposed records have grown. With heightening risks of cyberattacks and natural disasters, keeping the retail payments system resilient becomes more challenging for the industry and more important for the Federal Reserve as a policy goal.

The Payments System Research group has been engaged in understanding all of these retail payments system changes for the last 20 years. As payment cards increased in popularity, so did our research on the payment card industry. Interchange fees and some network rules were sources of controversy. To account for two-sided markets, network effects, and economies of scale and scope, a new analytical framework was required to analyze the market structure of the payment industry and its implications. As new retail payment services have emerged, the group evaluated them to understand the flows and the roles nonbanks, fintechs, and technology play in processing from end-to-end. We have studied payment preferences of consumers, including both the banked and unbanked, and incentives or

motivations that explain behaviors of various other parties, including merchants, businesses, financial institutions, and payment operators. With respect to payment security—an ongoing area of focus—the group has examined fraud, standards setting, resiliency, and data protection. And across all of these topics, we have identified and considered policy issues and the roles central banks could play to address them.

As we move into the next decade, the Payments System Research group’s charge and commitment remain unchanged. We will continue to analyze domestic and international payments systems and identify risks and trends to support the Federal Reserve’s responsibility of setting and recommending changes to policy, promoting the safety and soundness of financial institutions, and providing and maintaining an effective and efficient payments system for the country. We will also continue to monitor the retail payments system’s evolution as technological progress accelerates; as use of consumer data increases and privacy issues result; as consolidations, acquisitions, and partnerships change the market structure of retail payments as we know it; and as issues of cross-border payments and a more global payments ecosystem percolate and demand resolution.

As we follow these developments, we will consider questions such as:

- What are the implications of market structure changes for efficiency, safety, and accessibility of the payments system?
- What are central banks’ roles given new market structures, new types of payment methods, and the increasing importance of cross-border payments?
- What will the adoption of new payments by consumers and businesses look like? Will any groups be left behind?
- What will the trends of payment security look like? Are incentives properly aligned to protect data and privacy and to mitigate payment fraud?
- What, if any, regulatory changes are needed?

The Payments System Research group will continue to monitor, analyze, and evaluate the effects of these and other payments system developments and share learnings and observations with you through this publication and other research products. We invite you to stay tuned.

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<sup>1</sup> New Standard Entry Class Codes were introduced that allowed for the creation of ACH transactions at the point of purchase (POP), at drop and lock box locations (ARC), via Internet (WEB), over the phone (TEL), and for represented checks (RCK).

<sup>2</sup> Nacha reported that in the fourth quarter of 2019, each business day recorded at least one million same-day ACH transactions.

<sup>3</sup> Synthetic identity fraud is a type of fraud in which perpetrators combine fictitious and real information to create new identities to defraud credit card issuers, financial institutions, government agencies, or individuals. Authorized push payment fraud is a form of fraud in which victims are manipulated into making push payments (such as wire, ACH credit, and faster payments) to fraudsters, typically by social engineering attacks.

## References

- Federal Reserve System. 2004. "[The 2004 Federal Reserve Payments Study: Analysis of Noncash Payments Trends in the United States: 2000–2003.](#)" Washington DC, December.
- Federal Reserve System. 2019. "[The 2019 Federal Reserve Payments Study.](#)" Washington DC, December.
- Greene, Clair, and Joanna Stavins. 2019. "[The 2018 Diary of Consumer Payment Choice.](#)" Federal Reserve Bank of Atlanta, *Research Data Reports*, no. 19-03.

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