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**Abstract**

Consumers and businesses are increasingly expecting faster payments. While many countries have already developed or are in process of developing faster payments, the availability of these payments is fragmented in the United States. The recently released paper by the Federal Reserve encourages private sector participants to provide faster payment services. However, private-sector faster payments systems will face significant challenges in achieving public policy goals of ubiquity, safety, and efficiency unless system governance represents broad public interests. One way to better align private-sector interests with those of the public is for the Federal Reserve to influence governance of the private-sector systems through its leadership role.

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*Keywords:* Faster payments, System governance, Public interest

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## 1. Introduction

In the wake of technological innovations such as high-speed data networks and sophisticated mobile computing devices, consumers and businesses have raised their expectations for faster payments. Payment users increasingly expect electronic payment products to be accessible through mobile and online channels at any time. Faster payment products require providers to immediately confirm payment execution, notify the payer and payee, deduct the payment from the payer's account, and make funds available to the payee's account in (near) real time. More than 20 countries around the world have already developed or are in the process of developing faster payments to better meet the needs of their citizens and businesses. In the United States, however, the availability of these payments systems is fragmented. Unless coordination barriers are overcome, the United States risks falling behind other countries.

Coordination problems inhibit payment system improvements around the world, but overcoming them is arguably more difficult in the United States. Implementing faster payments in the United States requires coordinating more than 13,000 financial institutions, millions of businesses, and many payment networks and service providers. A further complication is that U.S. public agencies, including the Federal Reserve, lack the authority to mandate faster payments. In other countries, governments or central banks exerted pressure on private sector participants to implement faster payments systems.

Although the Federal Reserve lacks the authority to mandate faster payments, it can play a leadership role in coordinating industry participants to implement a faster payment infrastructure.[1] Based on research and input from thousands of stakeholders, the Federal Reserve developed a vision and strategy to establish faster payments capabilities in the U.S. payments

[1] In the past, the Federal Reserve played a leadership role in promoting the Check Clearing for the 21st Century Act, commonly known as Check 21, a federal law allowing depository institutions to truncate original checks and process check information electronically.

system in the recently released *Strategies for Improving the U.S. Payments System* paper (Federal Reserve System 2015). The Federal Reserve's vision extends beyond the speed of the payment system to include public policy goals such as ubiquity, safety, and efficiency. In addition, the Strategies paper encourages private sector participants to provide faster payment services and reserves judgment on expanding the Federal Reserve's operator role to a later time.[2] Instead, the paper commits the Federal Reserve to providing a public policy perspective, analytical support, and leadership in coordinating among stakeholders as their representatives, together with the Federal Reserve, evaluate approaches to faster payments.

This paper examines the challenges the private sector may face developing and implementing faster payments systems that achieve public policy goals and discusses how the Federal Reserve might help overcome these challenges. The paper finds that unless private-sector systems take into account broad public interests when making decisions about rules, services, and pricing, private-sector systems are less likely to achieve public policy goals. One way to better align private-sector interests with those of the public is for the Federal Reserve to influence governance of the payments systems through its leadership role.

The paper is organized as follows. Section 2 explains the benefits of faster payments and public policy goals of ubiquity, safety, and efficiency. Section 3 defines the key components of a private-sector faster payments system and evaluates the extent to which private-sector systems can achieve policy goals. Section 4 discusses how the Federal Reserve's leadership role could influence governance of private-sector systems to better achieve policy goals. Section 5 concludes.

[2] The Federal Reserve would not consider an operator role in faster payments unless it finds clear public benefit and determines private sector approaches will not provide faster payments that can achieve policy goals in a timely manner. Several criteria must be met as the Federal Reserve considers the introduction of new services or major service enhancement. For more details, see *http://www.federalreserve.gov/paymentsystems/pfs_frpaysys.htm#TocCriteria*.

## 2. Benefits of faster payments and public policy goals

A payment system is the set of functions, processes, rules, devices, technologies, and standards that enables its users to make a payment. Payments systems that can process payments in near real time—from several seconds to a few minutes—provide various benefits to consumers, businesses, and governments that send and receive payments, as well as to payment service providers. In addition, "faster payments" systems must achieve three policy goals—ubiquity, safety, and efficiency—aligned with the Federal Reserve's mission for the U.S. payments system.[3] Of these three goals, ubiquity and safety are foundational. Without them, a faster payments system will not gain traction to the degree needed to achieve efficiency or desired speed.

### 2.1 Benefits of faster payments

The speed of payments matters to both end users and payment service providers. End users are primarily concerned with four types of speed: the speed of payment initiation, the speed of payment notification to the payee, the speed of payment deduction from the payer's account, and the speed of funds becoming available to the payee (Schuh and Stavins). Payment service providers, however, must also consider the speed of exchanging messages between the payer's and payee's service providers for authorization and clearing; the speed of payment service providers' internal account processing, especially posting payments to its customers' accounts; and the speed of settlement among the payers' and payees' payment service providers.[4]

Making funds available in near real time benefits end users by allowing them to better control their cash flow and make and receive last-minute payments of all types. If emergency

[3] For more details on the Federal Reserve's payments mission, see *http://www.federalreserve.gov/boarddocs/rptcongress/annual06/sec2/c4.htm#nl2* and *http://www.federalreserve.gov/paymentsystems/pfs_frpaysys.htm.*

[4] The authorization and/or clearing message verifies a sufficient balance in the payer's account.

payments, such as those paid by the government to victims of natural disasters or by households to family members in need, are not received in time, the intended recipients may incur considerable hardship. Faster funds availability can also help consumers, especially those with low incomes, reduce the cost of overdrafts or declined payments due to insufficient funds.

Posting payments and notifying end users in near real time benefit businesses as well as consumers. Faster payment notification and posting may improve businesses' cash management. Faster posting may, in turn, accelerate other business operations; for example, a merchant could speed delivery by making goods available to its customers as soon as the payments post.

Real-time authorization and faster settlement are also beneficial for payment service providers, especially the payee's providers. The payee's service provider could incur credit risk if funds are made available to the payee before settlement occurs. This credit risk will be diminished, however, if the payee's service provider confirms the account making the payment has a sufficient balance and if the settlement among payment service providers occurs rapidly. In a faster payments system, both the payer's and the payee's account balances can reflect the payment as soon as their service providers exchange authorization messages.

Faster payments systems can provide payers and payees greater certainty as well as speed. For example, a faster payment product can guarantee that payments such as recurring monthly rent payments or payrolls for workers who currently receive checks will be received on a designated future date. Payers can order such payments before the designated date, and their payment service provider will process the payment and deduct the amount from their accounts on the designated date. Similar services for bill payments are currently available through online

banking, but the time the payment is deducted may vary depending on the underlying payment method—either automated clearinghouse (ACH) or check—used for these services.[5]

## 2.2 Public policy goals

Faster payments are expected to achieve public policy goals of ubiquity, safety, and efficiency. If these three goals are met, end users can enjoy the benefits of faster payments with reasonable costs, thus enhancing their welfare.

### *2.2.1 Ubiquity*

A ubiquitous payment method must be widely accepted by payees and used by payers in a variety of different circumstances. For example, both credit and debit cards are widely accepted by merchants and used by consumers for purchases and bill payments. Nonetheless, the cards are not widely used for person-to-person or business-to-business payments. In contrast, checks are used for broader payment needs: consumer-to-business (purchases and bill payments), business-to-consumer (payrolls and reimbursements), business-to-business, and person-to-person. The Federal Reserve seeks ubiquity in faster payments, expecting faster payments to eclipse checks in popularity and use and thereby improve overall payments system efficiency.

Ubiquity requires both interoperability and accessibility. Interoperability refers to the ability of payment service providers to work together to process faster payments, assuring that consumers and businesses can receive payments regardless of their account service provider. This attribute is especially important if multiple faster payments networks serve different subsets of payers and payees. Accessibility refers to the availability of a faster payments system to all end users regardless of where their accounts are held. A prerequisite for accessibility is financial institutions' broad participation in the faster payments system. Participation by other payment

[5] The payer's bank uses ACH if they have, or can easily obtain, the payee's bank account number, and they may deduct the payment amount a day before the designated date of payment receipt. Otherwise, the payer's bank writes a check on behalf of the payer and the timing of the deduction may depend on when the payee deposits the check.

service providers, such as providers of general-purpose prepaid cards, could further extend accessibility to millions of consumers who do not have an account at a depository financial institution. The cost and ease of use of a faster payments system also affect accessibility. For example, if end users are assessed high fees, they may not adopt faster payments. And if the requirements to sign up for, or send and receive, faster payments are lengthy and burdensome, end users may not adopt faster payments, thus inhibiting ubiquity.

*2.2.2 Safety*

Faster payments will reduce some risks, such as credit risk, but may increase others, such as fraud risk. Expediting payment settlement and verifying a sufficient balance in a payer's account will reduce the credit risk for the payee's payment service provider. Expediting the posting of payments to the payer's and payee's accounts will reduce the risk of overdraft or declined payments due to insufficient funds. But faster payments also have the potential to increase fraud. Near real-time payments will reduce the timeframe to detect fraud. Making funds available in near real time may also attract fraudsters who previously focused on payment methods with slower funds availability.

To address these threats, faster payments systems need advanced security technologies and protocols that rapidly detect fraud. In the payment card industry, which uses real-time authorization, some advanced security technologies are now widely used or at least available. For example, mobile devices and computer-chip embedded payment cards have technologies such as biometric and dynamic payment credentials to provide stronger authentication of payers and their payment devices. Neural network intelligence, which analyzes payment behaviors such as a payer's spending patterns and geographical area, can detect suspicious transactions outside of a specific payer's "norm."

Faster payments systems also need appropriately designed fraud loss liability and end-user protection, which affect the involved parties' incentives to deter fraud. Properly allocating fraud losses encourages the parties best positioned to control the security of faster payments to adequately invest in security measures.

*2.2.3 Efficiency*

Faster payments could enhance overall payment system efficiency by replacing less-efficient payment methods such as checks. The Federal Reserve identified five primary use cases that could immediately benefit from faster payments: person-to-person; occasional, remote consumer-to-business (for example, emergency bill payments); occasional, low-value business-to-person (for example, wages for temporary workers); occasional, high-value business-to-person (for example, medical insurance claims); and occasional, low-value business-to-business (for example, just-in-time supplier payments). Although check volume has been steadily declining since the mid-1990s, the share of checks in these five use cases is still significant (Federal Reserve System 2014).

To replace checks, faster payments may need to offer other benefits in addition to speed. For example, to encourage businesses to switch from checks, faster business-to-business payments could provide straight-through processing from invoicing to payments, include remittance and other information along with payments, and better protect against both external and internal fraud. These additional benefits may also improve the efficiency of business operations.

The approach used to develop and implement faster payments capabilities will affect payment system efficiency in the short run and long run. In the short run, an approach that uses existing infrastructure with real-time functionality, such as ATM and PIN debit networks, may

reduce implementation costs for physical infrastructure.[6] Even existing infrastructure, however, will need new rules, protocols, and standards to accommodate new faster payments.

In the long run, how financial institutions and other payment account service providers upgrade their account processing systems will affect payment system efficiency. Implementing faster payments requires financial institutions and other payment account service providers to invest in the capability of posting payments to their customers' accounts in near real time. Upgrading account processing systems to process not just faster payments but also ACH and card payments can reduce the average operating cost over this larger volume of payment transactions. Expanding the capability for near real-time posting to other payment methods will likely induce faster interbank processing of those payment methods and thus improve efficiency in the long run.

## 3. Can the private sector establish faster payments capabilities that achieve public policy goals?

The private sector may be able to build faster payments capabilities in the United States, but whether those capabilities can achieve public policy goals remains a question. A faster payments infrastructure could comprise one or more private-sector payment systems. In such an infrastructure, the system's owners would determine the system's rules, processes, and standards, subject to a system governance. Without guidance from public authorities, such as the central bank or regulatory authorities for financial institutions, a private-sector system may place greater weight on commercial interests than the interests of end users. Consequently, private-sector faster payments systems may face significant challenges in achieving public policy goals.

[6] In credit and signature debit networks, authorization messages are routed in real time, but clearing is made in a batch mode (Hayashi, Sullivan, and Weiner).

### 3.1 System owners, operators, and governance

The primary players in a payment system are its owners, operators, and members. System owners establish and maintain the system's rules, processes, and standards. Owners can be associations, for-profit companies, or even central banks. In some payment systems, owners also play an operator role. System operators provide services to system members, such as financial institutions, and maintain the system's day-to-day operation.[7] Operators route authorization messages, exchange transaction data (clearing), and facilitate the exchange of funds among member institutions (settlement) in accordance with the system's rules, processes, and standards.[8] System members provide services to end users and may specialize in services for specific groups of end users, such as merchants or cardholders.

System governance describes the manner in which a system's goals and strategies are established and the means through which those goals and strategies are attained (Summers and Wells 2015). For example, a payment system can be governed as a for-profit or nonprofit system. For-profit payment systems include U.S. credit card systems such as Visa, MasterCard, American Express, and Discover. These systems are governed to maximize the profits of their owners or member financial institutions (Rochet and Tirole).

In many markets, competition among for-profit suppliers can benefit end users. In payments markets, however, competition among private-sector systems may not be optimal. Payments markets have two features that make competition less likely to address end users' interests. The first feature is the two-sided nature of the market. In a payment market, end users are divided into two distinct groups: payers, such as cardholders, and payees, such as merchants.

[7] Some systems provide services directly to end users.
[8] Some payments methods, such as ACH and checks, do not have authorization in their process. Some system operators do not perform settlement and instead use outside settlement services, such as Federal Reserve National Settlement Services.

If system competition focuses only on one group of end users, the other group's interests may not be met. The second feature of payment markets is economies of scale. In the payment industry, a large share of costs is fixed—thus, as one system processes a larger volume of payments, its average cost per payment becomes lower than that of other systems. Economies of scale reduce the number of systems needed to meet demand, thereby increasing market concentration. The resulting small number of system owners may exploit their market power to extract rents from end users.

Card networks, for example, seem to have prioritized consumers over merchants in setting their interchange fees. Interchange fees are set by the card network, paid by merchants, and received by card issuers for each card transaction. In U.S. payment card markets, interchange fees have increased over the last two decades.[9] These fee increases may indicate intensified card network competition for cardholders or card issuers, but they also imply weak or absent competition for merchants. In fact, card issuers and networks use interchange fees to fund rewards for cardholders, competing to offer more generous rewards than their competitors. Thus, higher interchange fees may benefit cardholders who receive rewards but harm other cardholders and noncardholders who pay higher prices for goods and services as a result of these fees (Hayashi 2009).

Although merchants prefer lower interchange fees, rejecting card brands with higher interchange fees may result in lost sales to rival merchants. Until recently, several card networks with significant market shares employed rules that prevented merchants from steering customers toward less expensive payment methods. Visa and MasterCard abolished such rules in response to recent legislative and regulatory interventions, but American Express still employs them

[9] U.S. payment card interchange fee trends are tracked by the Payments System Research department at the Federal Reserve Bank of Kansas City. The most recent data are available at: *http://www.kansascityfed.org/publicat/psr/dataset/US_IF_August2014.pdf.*

(Hayashi 2012).[10] Public authorities in more than 50 countries have intervened in determining interchange fees and network rules imposed on merchants, suggesting private-sector systems have some difficulty serving the interests of end users (Hayashi and Maniff).

Nonprofit payment systems may not necessarily better address end-user interests in their governance. For example, NACHA (previously the National Automated Clearing House Association), the owner of the U.S. ACH system, is a nonprofit association of member financial institutions and regional payment associations that collectively govern the system and vote on its operating rules. The Federal Reserve shares the system operator role with the Electronic Payments Network, but the Federal Reserve is not a NACHA member and thus has no voting rights. NACHA does request comments on proposed amendments to its operating rules from a broader group of stakeholders, but NACHA members have no obligation to take these perspectives into account in their voting decisions.

### 3.2 Achieving ubiquity

Ubiquity requires both interoperability among various entities that play roles in providing faster payments and accessibility among end users. If private-sector faster payments systems prioritize commercial interests over public interests, they may be less likely to achieve these critical attributes.

Over the last decade, private-sector participants have introduced a broad range of products to address payments speed in the United States with limited success. For example, card networks, large financial institutions, and nonbanks have offered electronic person-to-person payment products that use payment cards, ACH, and payment accounts at nonbanks (Bradford

[10] In addition, about 10 states prohibit merchants from imposing surcharges on their card customers.

and Keeton).[11] Some products, such as Square Cash and PayPal, have gained traction but not ubiquity, partly due to the lack of interoperability across different person-to-person products. For example, a payer using Square Cash cannot send money straight to a payee's PayPal account. A payer using PayPal cannot send money directly to any payee's bank account. Without interoperability, a payer must use many different products to reach payees; payees, in turn, must join multiple systems to receive funds from various payers. This inconvenience may have discouraged consumers from adopting past and current electronic person-to-person products.

Recently, interoperability has become more difficult to achieve even among payment systems that collaborated in the past. Historically, U.S. PIN debit card networks developed and implemented industry-wide standards to allow end users to seamlessly use any PIN debit network's services. As PIN debit networks migrate to chip card technology along with credit and signature debit networks, however, their interoperability has been threatened. Chip card technology, also known as Europay, Mastercard, and Visa (EMV) technology, was developed by a group of major global card brands.[12] The proprietary nature of the technology standard, coupled with a unique requirement in the U.S. debit card industry—specifically, that a debit card carry at least two unaffiliated card networks to process transactions on the card—has provided global brands such as Visa and MasterCard a competitive advantage over domestic PIN debit networks (Lucas).[13] Visa and MasterCard, which have the property right to EMV chips, could

[11] Private sector initiatives also include electronic business-to-business payments. Products such as e-invoicing that help promote electronic payments have been developed through various partnerships within the private sector (Busche, Gustin, and Mitchell).

[12] The EMV chip technology was developed by EMVCo, which is now owned by six major global card brands including American Express, Discover, JCB, MasterCard, UnionPay, and Visa.

[13] Another example is "tokenization" developed by EMVCo. A token which replaces the payment card account number is used for transactions made at a particular online merchant or mobile wallet provider (for example, Apple Pay). The token and card account number are stored on a highly secure server called a "vault." Although this tokenization uses open standards, due to the proprietary environment in which the standards were developed, global card brands have a competitive advantage in offering vault services compared with domestic card networks or processors.

have met the requirement by making their chip available only to each other, or to a subset of PIN debit networks they could select. After a long debate among card networks, Visa and MasterCard eventually made a series of bilateral agreements with each PIN debit network. Although these agreements preserve the interoperability among PIN debit networks, reaching the solution took a long time.

A strong industry leader could expedite the process by coordinating financial institutions, other account service providers, and their payment service and technology providers to reach consensus on how to build faster payments capabilities. Recently, The Clearing House (TCH) announced its intent to design and develop a real-time payment system that will process payments made in a variety of circumstances.[14] TCH is the oldest banking association in the United States and is owned by the largest commercial banks. TCH is also a payments processing company, providing clearing and settlement services to its member banks and other financial institutions. TCH will likely operate the real-time payment system it builds, although whether it will be the sole operator and also own the system is unclear. If TCH is the sole operator, smaller financial institutions may be concerned about having equal access to its faster payments infrastructure. TCH's payment services have been used mainly by large financial institutions, while smaller institutions have typically used Federal Reserve services. Although fees charged by TCH to smaller financial institutions may still be a concern, these institutions will be able to access TCH's faster payments services through correspondent banks, bankers' banks, and processors as they do with payment cards (Hayashi 2003). Associations of smaller financial institutions, such as the Independent Community Bankers Association, have assisted TCH's initiative, showing the potential to form consensus among financial institutions of all sizes to shift to faster payments (Pike and Britt).

[14] TCH's press release is available at: *https://www.theclearinghouse.org/press-room/in-the-news*.

Although private-sector systems may be able to achieve interoperability, end users will be less likely to adopt them unless system objectives are aligned with their desire for features such as low cost and ease of use. Competition among profit-oriented payment systems is often aligned with the interests of only one group of end users—payers or payees. In a new faster payments market, competition among private-sector systems must address the interests of both groups of end users. If one group is reluctant to adopt faster payments, that group may discourage the other from adopting them as well.

Nonprofit systems may not sufficiently consider end users' interests, either. For example, NACHA recently proposed a rule change to require same-day settlement and posting of certain ACH transactions, together with an interbank fee. NACHA considered same-day ACH a premium service with a relatively small volume of transactions and calculated the interbank fee to recoup implementation, operating, and opportunity costs for financial institutions that receive same-day ACH payments for their customers. While financial institutions and their trade associations are supportive of the interbank fee, merchants and their trade associations oppose the level of the interbank fee and some of the cost components used to determine it. The Federal Reserve Board of Governors also expressed concerns about the interbank fee, which may not be aligned with the interests of end users and thus may inhibit their use of the same-day ACH service.[15] A nonprofit faster payments system might prioritize recovering the costs of implementing and operating the system for its owner, operator, and member financial institutions in a relatively short timeframe over facilitating broad end-user adoption of faster payments. The resulting fees for end users may be higher than socially desirable, thereby inhibiting end-user adoption and ubiquity.

[15] The Federal Reserve Board of Governors' comments are available at: *http://www.federalreserve.gov/paymentsystems/board-staff-comment-letter-to-NACHA-20150206.pdf*. In response, NACHA reduced the interbank fee to 5.2 cents from the 8.2 cents it originally proposed.

### 3.3 Achieving safety

Given heightened security risk in the payments system in general, any faster payment system will require a high level of security and safety. Nevertheless, private-sector systems may have difficulties achieving the desired level of security and safety due to their liability allocation and the possibility of multiple systems.

Liability allocation for fraud losses or data breaches is an effective tool payment systems can use to compel system members and participants to employ effective security practices. However, systems can also use this tool to impose heavier liability on parties whose interests are less represented by the systems' governance. In the latter case, the parties may take inadequate effort to control fraud or data security.

Ineffective liability allocation is evident in some existing payments systems. For example, payment card networks allocate heavier fraud liability to merchants than to card issuers when fraud occurs for a "card-not-present" (CNP) transaction such as an online transaction.[16] This fraud liability allocation does not incentivize merchants and card issuers to adopt technologies or protocols that strengthen payer authentication in the CNP environment. One viable security protocol is 3D Secure (3DS), employed in services such as Verified by Visa and MasterCard SecureCode, but 3DS has not been widely adopted in the United States. The 3DS protocol enables card issuers to directly authenticate cardholders in real time during an online transaction. Authentication requires the cardholder to communicate a previously shared secret, such as a password, to the card issuer.

[16] According to the Board of Governors of the Federal Reserve System (2014), merchants bore 71 percent of CNP fraud losses for signature-based debit card transactions in 2013. In contrast, the card networks allocate heavier liability to card issuers than to merchants for "card-present" transactions and card issuers bore about 80 percent of card-present fraud losses for signature-based debit card transactions in 2013.

Online merchants, who bear CNP fraud losses, do not require their customers to use 3DS because doing so may lose sales to consumers who consider 3DS burdensome. As a result, online merchants are unlikely to adopt this protocol unless rival online merchants require their customers to use it.[17] Furthermore, card issuers have little incentive to encourage their cardholding customers to use 3DS because the issuers do not bear most of the CNP fraud losses. Cardholders also have little incentive to use 3DS because they are protected from payment card fraud losses.[18] Assessing whether unbalanced interests in system governance cause ineffective liability allocation is difficult. Nonetheless, the likelihood of improper or ineffective liability allocation in a payment system may be greater when its governance represents only certain entities' interests rather than the balanced interests of all stakeholders.

A second challenge in achieving safety in private-sector systems is that a faster payments infrastructure will likely comprise multiple systems and therefore may be less able to adopt up-to-date security technologies and protocols compared with a single system. The technologies and protocols a system uses for its system and network security and protection against fraud affect its interoperability. Interoperability is important even within a system, as many security technologies and protocols require joint adoption by industry participants. For example, both the payer's and payee's payment service providers need to adopt the same encryption or tokenization standard to read payment instructions.[19] To preserve intrasystem interoperability, each system

[17] Online merchants use other security protocols, such as IP address verification and fraud scoring, to detect suspicious transactions. However, those protocols are arguably less effective or more costly than 3DS or similar protocols that provide strong payer authentication.

[18] Regulations E and Z protect consumers so that their debit or credit card fraud liability does not exceed certain levels set in those regulations. Credit and signature debit card networks provide further protections to consumers, and consumers are generally not liable for payment card fraud losses.

[19] Encryption is the process of transforming plain text information into non-readable information. A key (or algorithm) is required to decrypt the information and return it to its original plain text format. Tokenization is the process of substituting a sensitive data element, such as a payment card number or bank account number, with a non-sensitive equivalent (or "token") that has no extrinsic or exploitable meaning or value. The token and the sensitive data element are stored securely by highly secure servers.

may require members and participants to adopt certain security technologies or protocols. To achieve intersystem interoperability, however, multiple systems need to agree on which technologies or protocols to use. In the ever-changing payment security landscape, the time spent negotiating and implementing updated security technologies and protocols across multiple systems may undermine the security of the faster payments infrastructure.

The chip card technology migration currently underway in the United States is a good example of how security upgrades can complicate intersystem interoperability. Chip card technology was developed almost 20 years ago and has been implemented in many other countries. However, global card brands waited many years before deciding to deploy this technology in the United States and took additional time to negotiate with domestic PIN debit networks over how to implement this technology on debit cards to preserve interoperability.

### 3.4 Achieving efficiency

System governance affects efficiency gains and losses from faster payments through different channels, such as replacing less-efficient payment methods, facilitating faster processing of other payment methods, and lowering implementation and operating costs. Private-sector faster payment systems may find efficiency gains challenging to achieve through the first two channels, while the effect of system governance is ambiguous with respect to the third channel.

Private-sector systems may not significantly improve overall payment system efficiency if faster payments do not replace less-efficient payment methods such as checks. Unless private-sector systems' governance sufficiently considers end users' interests, end users may not adopt faster payments and may continue to rely on checks.

Private-sector systems may also have little or no incentive to encourage their members to implement a flexible faster payments capability—that is, a capability that enables payment providers to process various payment methods faster. Financial institutions and other payment service providers could upgrade their account processing system to post and reflect payments to their customers' accounts in near real time for not only faster payments but also other payment methods. This capability may facilitate faster interbank processing for other payment methods and thus improve overall payment system efficiency. While a system owner with a public policy perspective may encourage its members to implement a flexible, real-time account processing system, a private-sector system that competes with other payment methods may not, as doing so may reduce its own payments volume and thus profit.

Private-sector systems could have lower implementation and, possibly, operating costs. If private-sector systems evolve from existing systems, such as ATM and PIN debit networks with real-time authorization and clearing functionality, their implementation costs may be lower. Those systems might also have a lower average operating cost if they can process faster payments as well as payments made with other methods. If private-sector systems build a new infrastructure, however, system governance may have little effect on implementation and operating costs. Instead, the system's format—such as whether the infrastructure comprises single or multiple systems and whether each system is supported by single or multiple operators—will have the most significant effect. Both implementation and operating costs will be lower under an infrastructure with a single system and a single system operator. The cost of building and maintaining a single platform owned by a system and operated by its single operator will be lower than that of building and maintaining multiple platforms owned by different systems and operated by different operators. Since processing payments involves large

fixed costs and low marginal costs, average operating costs will be lower as fewer operators process faster payments.

## 4. Public authority influence on governance of private-sector systems

Public authorities could influence governance of private-sector systems in the United States to better align the interests of system owners and members with those of end users and the public and thereby achieve public policy goals. Experiences in several other countries underscore the importance of involving a public authority in faster payments system governance. In the UK and Australia, for example, private-sector participants play—or will play—system owner and operator roles, but their systems have a robust mechanism to take into account public interests. In these countries, public authorities influence system governance through various roles, including a payment regulator role, which has explicit authority to regulate payments systems. In the United States, the Federal Reserve could influence governance of private-sector systems through its leadership role; however, if this role is not effective in meeting policy goals of ubiquity, safety, and efficiency, the Federal Reserve may need to consider an operator or regulator role.

### 4.1 Incorporating public interests in UK and Australian faster payments systems

Faster payments infrastructures in several countries typically comprise a single payment system, but the entities that own or operate them vary by country. In some countries, such as Mexico and Brazil, the central bank owns and operates the system. In other countries, such as the UK and Australia, private-sector participants play (or will play) system owner and operator roles. Regardless of which entities own or operate them, most systems have a robust mechanism to incorporate broad public interests in their governance. The mechanism can range from independent board members representing public interests, to payment regulators' influencing system governance, to the central bank solely or jointly serving as system owner.

In the UK, the system owner of Faster Payments Service (FPS) is Faster Payments Scheme Limited (FPSL), a nonprofit member organization open to any credit institution with a settlement account at the Bank of England.[20] While FPSL is fully accountable for the system's day-to-day operation, VocaLink operates the system and used its expertise as the sole operator of BACS (formerly known as Bankers' Automated Clearing Services) and the LINK ATM network to implement the faster payments capability. The banking industry voluntarily initiated FPS to meet the government request for a same-day interbank clearing service and developed a near real-time service through a new infrastructure (Summers and Wells 2011). To represent public interests, FPSL includes three independent members on its board of directors in addition to credit institution members (Tillotson). Furthermore, the Payment Systems Regulator, an independent regulator whose missions include consumer protection, market integrity enhancement, and promotion of competition and innovation, has designated FPSL for regulation.[21]

In Australia, a faster payments capability is currently under development. After the Reserve Bank of Australia (RBA) published a strategic review of payment innovation and core criteria for a faster payments solution in 2012, it accepted an industry-based solution proposed by a committee within the Australian Payments Clearing Association (APCA). The APCA is the self-regulatory body for Australia's payments industry and its members, including financial institutions, retailers, and payment service providers. The industry's solution was to build the New Payments Platform (NPP), a new infrastructure for faster payments, and set up NPP Australia Limited, a new industry mutual company, to steer the NPP development and implementation. NPP Australia's founding members, including 11 financial institutions and the

[20] Ten banks are currently members. Institutions must meet a few other requirements to become a member. See Summers and Wells (2011).
[21] FPSL is also designated as a systemically important financial markets infrastructure and is therefore overseen by the Bank of England.

RBA, have committed funding and appointed the Society for Worldwide Interbank Financial Telecommunication (SWIFT) to design, build, and operate NPP's basic infrastructure (Australian Payments Clearing Association). As a member of the NPP and the authority with explicit payments regulation power, the RBA can influence the payments platform's governance.

### 4.2 The Federal Reserve's leadership role

Although no U.S. government agency has explicit authority to regulate how a faster payments system is established and operated, the UK and Australian experiences provide useful lessons for both implementing faster payments in the United States and determining the Federal Reserve's leadership role. The UK and Australian experiences suggest the Federal Reserve or another entity with a public policy perspective should consider playing a role in designing and developing private-sector faster payments systems to ensure system governance takes into account public interests. Foreign experiences also suggest the Federal Reserve should consider remaining involved after implementation to ensure the private-sector faster payments systems meet public policy goals in the long run.

The Federal Reserve could engage in three key activities. First, the Federal Reserve could create core criteria to assess alternative approaches to designing and developing faster payment capabilities. The core criteria would reflect desired outcomes, public policy goals, and public interests that faster payments should address. The core criteria might also describe system governance and how decisions on rules and standards incorporate broad public interests. The Federal Reserve is currently establishing a faster payments task force with diverse stakeholder representation to identify and evaluate alternative approaches. The core criteria the Federal Reserve develops could guide the task force's evaluation.

Second, in leading the task force, the Federal Reserve could ensure the task force's evaluation of alternative approaches aligns with the core criteria and is fair and transparent to all stakeholders. The Federal Reserve could manage and reconcile conflicts of interests among stakeholders to achieve broad agreement on the path to implementing an effective faster payments system.

Third, to ensure a faster payments system remains aligned with public interests over the long term, the Federal Reserve could monitor owners of the faster payments system on an ongoing basis. In its leadership role, the Federal Reserve could encourage owners of the faster payments system to build and operate the infrastructure with rules, services, and pricing that reflect the core criteria, and with a robust mechanism to incorporate public interests in its governance. Including independent members who represent public interests on the system's board of directors is one such mechanism. If the faster payments infrastructure comprises a single system, the Federal Reserve could have a voting right on proposals to amend system rules, services, and pricing.

The first and second activities are important for the selection and implementation phases of U.S. faster payments systems. The third activity will encourage the systems to continue meeting end-user needs and achieve public policy goals even as the systems amend rules, services, and pricing in the future. Once end-users adopt faster payments, they will continue to use them—like many other payment methods—for a long time. Therefore, the Federal Reserve's long-term commitment as a leader influencing system governance will be important to help faster payments systems gain public trust and thus achieve ubiquity.

Closely monitoring the governance of faster payments systems on an ongoing basis may also reduce the need to regulate them. International experiences suggest regulatory actions are

likely when payment systems' rules or pricing such as interchange fees deviate from public interests (Hayashi and Maniff; RBA 2015). A close monitoring of faster payments systems in the United States could eliminate or at least reduce the likelihood that amended rules, services, and pricing will diverge from public interests. Furthermore, monitoring the governance of payment systems or the ownership of payment infrastructures is a common proactive measure among governments and central banks in a growing number of countries. For example, the Payment Systems Regulator in the UK recently launched a market review of the ownership and competitiveness of payments system infrastructure provisions (including FPS, BACS, and LINK). The review will consider whether the current system and organization deliver outcomes consistent with the Regulator's objectives of promoting effective competition, innovation, and the interests of end users.

## 5. Conclusion

Faster payments, if implemented appropriately, will likely improve efficiency in the U.S. payments system and end users' welfare. However, private-sector faster payments systems will face significant challenges in achieving public policy goals of ubiquity, safety, and efficiency unless system governance represents broad public interests. A strong industry leader could achieve interoperability, a critical factor in achieving ubiquity, by coordinating financial institutions, other account service providers, and their payment and technology service providers. Nevertheless, private-sector systems may fail to achieve accessibility for end users, another critical factor for ubiquity, unless system objectives are aligned with end users' desire for features such as low cost and ease of use. With a great possibility of multiple systems, private-sector faster payments systems may be less able to adopt up-to-date security technologies and protocols compared with a single system and therefore may have difficulties achieving the

desired level of security and safety. Private-sector systems could have lower implementation costs by using existing systems, thus achieving efficiency in the short run. However, such systems may not achieve efficiency in the long run: unless system governance sufficiently considers end users' interests, end users may not adopt faster payments and may continue to rely on less-efficient methods such as checks.

The Federal Reserve could engage in three key activities in its leadership role to influence the systems' governance: creating core criteria that reflect desired outcomes, governance, public policy goals, and public interests; ensuring the faster payment task force's evaluation of alternative approaches aligns with core criteria; and monitoring faster payment systems and strongly encouraging them to build and operate the infrastructure to both meet core criteria and incorporate public interests in its governance.

Whether the Federal Reserve's leadership role will be effective in influencing private-sector approaches to achieve public policy goals remains to be seen. Nevertheless, this leadership role may warrant consideration before alternative roles such as regulator or operator. A leadership role may increase the probability of success of private-sector systems while avoiding public authority intervention as regulator or operator. The success of the Federal Reserve's leadership role—or more importantly, the success of faster payments implementation in the United States—depends critically on collaboration with a broad range of industry stakeholders, including end users.

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