

FEDERAL RESERVE SYSTEM

12 CFR Chapter II

Docket No. OP – 1625

Potential Federal Reserve Actions to Support Interbank Settlement of Faster Payments, Request for Comments

SUMMARY: As part of its overall mission, the Federal Reserve has a fundamental interest in ensuring there is a safe and robust U.S. payment system, including a settlement infrastructure on which the private sector can provide innovative faster payment services that serve the broad public interest. Accordingly, the Board of Governors of the Federal Reserve System (Board) is seeking input on potential actions that the Federal Reserve could take to promote ubiquitous, safe, and efficient faster payments in the United States by facilitating real-time interbank settlement of faster payments. While the Board is not committing to any specific actions, potential actions include the Federal Reserve Banks developing a service for 24x7x365 real-time interbank settlement of faster payments; and a liquidity management tool that would enable transfers between Federal Reserve accounts on a 24x7x365 basis to support services for real-time interbank settlement of faster payments, whether those services are provided by the private sector or the Federal Reserve Banks. The Board is seeking input on whether these actions, separately or in combination, or alternative approaches, would help achieve ubiquitous, nationwide access to safe and efficient faster payments.

DATES: Comments on the potential actions must be received on or before December 14, 2018.

ADDRESSES: You may submit comments, identified by Docket No. OP – 1625, by any of the following methods:

- Agency Web Site: <http://www.federalreserve.gov>. Follow the instructions for submitting comments at <http://www.federalreserve.gov/generalinfo/foia/ProposedRegs.cfm>.
- E-mail: regs.comments@federalreserve.gov. Include docket number in the subject line of the message.
- FAX: (202) 452-3819 or (202) 452-3102.
- Mail: Ann Misback, Secretary, Board of Governors of the Federal Reserve System, 20th Street and Constitution Avenue, N.W., Washington, DC 20551.

All public comments will be made available on the Board's web site at <http://www.federalreserve.gov/generalinfo/foia/ProposedRegs.cfm> as submitted, unless modified for technical reasons or to remove personally identifiable information at the commenter's request. Accordingly, comments will not be edited to remove any identifying or contact information. Public comments may also be viewed electronically or in paper in Room 3515, 1801 K Street NW (between 18th and 19th Streets NW), between 9:00 a.m. and 5:00 p.m. on weekdays.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

I. Context for Public Comment

A. *The Reasons for Faster Payments*

Broad trends in society based on technological advancements have changed the ways that people interact with others, conduct commerce, and access information. While many industries have adapted, the same is not equally true for the nation's payment and settlement system that foundationally supports commerce and the economy. For example, a business in Florida can immediately deliver an invoice by e-mail to a customer in Oregon. The receipt of the corresponding payment from its customer, however, may take days to receive, even if initiated quickly. This lack of speed has economic implications and societal costs borne by individuals, households, and businesses.

Traditional payment methods, such as checks, automated clearinghouse (ACH) payments, and debit and credit cards, form a retail payment infrastructure that is safe, reliable, and ubiquitous, albeit not necessarily quick.¹ These traditional payment methods have served our economy well over decades (and for checks, over most of the country's history).² The ubiquitous nature of these payment methods generally allows any two individuals or businesses (that is, end users) with accounts at banks to exchange value supporting an underlying economic transaction.³

¹ Retail payment systems are those that handle large volumes of lower-value payments, such as those among individuals or between an individual and a business. For more information, see Committee on Payments and Market Infrastructures, "A glossary of terms used in payments and settlement systems," the Bank for International Settlements, updated October 17, 2016. Available at: <https://www.bis.org/cpmi/publ/d00b.htm>.

² According to the Federal Reserve Payments Study, in 2015, checks, the ACH system, and payment cards, including debit and credit cards, accounted for over 144 billion payments and nearly \$178 trillion in value. Federal Reserve Board, "The Federal Reserve Payments Study 2016." Available at <https://www.federalreserve.gov/paymentsystems/files/2016-payments-study-20161222.pdf>.

³ Throughout this notice, the term "bank" will be used to refer to any type of depository institution. Depository institutions include commercial banks, savings banks, savings and loan associations, and credit unions.

As a result, regardless of where they hold their accounts, individuals can receive payroll deposits from their employers, households can pay their utilities, mortgage, rent, and other bills, and businesses can exchange commercial payments. For payments to most merchants for goods and services, individuals can similarly use debit cards to make payments from their bank accounts.⁴

Over the past two decades, however, a gap has emerged between the capabilities of traditional payment methods and end-user expectations for enhanced payment speed, convenience, and accessibility. A new method of faster payment has emerged to address this gap, with several nonbank payment service providers entering the payment market alongside—and sometimes in lieu of—banks. Faster payments allow end users to initiate and receive payments at any time of the day, any day of the year, and to complete those payments in near-real time (from the end users’ perspective), such that, within seconds, the recipient has access to final funds that can be used to make other payments.

The term “faster payments” is broadly used in the payment industry to indicate simply that increased speed, convenience, and accessibility are essential features for the future of the payment and settlement system. However, faster payments provide more to individuals and businesses than just the ability to make payments quickly from a mobile device. For example, when funds move in and out of end-user bank accounts in real time, end users have more flexibility in managing their money. Faster payments eliminate the need to schedule bill or vendor payments well in advance and, more broadly, allow end users to make time-sensitive payments whenever needed. By increasing flexibility and accessibility, end users may also have greater scope to avoid penalties such as late fees.

⁴ Although credit cards form part of the retail payments infrastructure, they do not operate using deposit balances and deposit accounts, but instead operate on the basis of credit and credit card accounts.

The development of payment and settlement services that are essentially real time and always available is a worldwide phenomenon. Both advanced and emerging economies have undertaken efforts to develop faster payment services, and those services are now broadly accessible to the general public in an increasing number of countries.⁵

Efforts to implement faster payments in other countries often reflect a collaborative, strategic endeavor that involves the payment industry, central banks, and other authorities. The deployment of accessible faster payment services generally requires extensive upgrades to a country's or region's payment and settlement infrastructure, involving significant coordination among all stakeholders. As part of these upgrades, central banks in various jurisdictions have implemented or planned changes to their settlement services in support of faster payments, reflecting the foundational role that central banks play worldwide in the settlement of obligations between financial institutions. The ability to reliably settle interbank obligations using balances at the central bank (also referred to as central bank money) is vital not only to the smooth functioning of the payment system but also to financial stability more broadly.

As the U.S. central bank, the Federal Reserve initiated a broadly collaborative effort with the payment industry and other stakeholders in 2013, to support development of ubiquitous, nationwide access to safe and efficient faster payments in the United States. While the private sector has to date implemented certain faster payment services for the public, there are still challenges related to achieving these broader goals. As part of its central mission, the Federal Reserve has a fundamental responsibility to ensure that there is a flexible and robust

⁵ For a discussion of global developments related to faster payments, see Committee on Payments and Market Infrastructures, "Fast payments – Enhancing the speed and availability of retail payments," Bank for International Settlements, November 2016. Available at <https://www.bis.org/cpmi/publ/d154.pdf>.

infrastructure supporting the U.S. payment system on which the private sector can develop innovative payment services that serve the broadest public interests.⁶ The settlement infrastructure concepts outlined in this notice are intended to advance the development of faster payments and to help support the modernization of the financial services sector's provision of payment services.⁷

B. The Federal Reserve's Role in the Payment System

A safe and efficient payment and settlement system that works in the interest of the public is vital to the U.S. economy, and the Federal Reserve plays important roles in helping maintain the integrity of that system.⁸ Fundamentally, the payment and settlement system facilitates financial transactions, purchases of goods and services, and the associated movement of funds on behalf of individuals, households, businesses, and other parties (such as government entities and nonprofit organizations). The importance of the payment and settlement system in daily lives and, more broadly, for all financial transactions underscores the significance of its safe and proper functioning for the U.S. economy.

⁶ For example, in 2017, the Board approved final guidelines for evaluating requests for joint accounts at the Federal Reserve Banks intended to facilitate settlement between and among depository institutions participating in private-sector payment systems. Available at <https://www.federalreserve.gov/newsevents/pressreleases/files/other20170809a1.pdf>. The original impetus for adopting these guidelines was to broaden access to joint accounts in support of private-sector developments in faster payments.

⁷ In a recent report, the U.S. Treasury recommended that the Federal Reserve move quickly to facilitate a faster retail payments system, such as through the development of a real-time settlement service, that would also allow for more efficient and ubiquitous access to innovative payment capabilities. In particular, smaller financial institutions, like community banks and credit unions, should also have the ability to access the most-innovative technologies and payment services. See U.S. Treasury, "A Financial System That Creates Economic Opportunity: Nonbank Financials, Fintech, and Innovation," July 2018. Available at <https://home.treasury.gov/sites/default/files/2018-07/A-Financial-System-that-Creates-Economic-Opportunities---Nonbank-Financi....pdf>.

⁸ The Federal Reserve has long provided payment services under authority of the Federal Reserve Act (*See e.g.*, Federal Reserve Act section 13(1) (12 U.S.C. 342), section 19(f) (12 U.S.C. 464), and section 16(14) (12 U.S.C. 248(o))).

One of the Federal Reserve’s most significant roles in that system involves providing mechanisms for the settlement of payment obligations between and among banks. Banks process payments on their own behalf as well as on behalf of their end-user customers, including individuals, households, businesses, and other parties. Banks—small, medium, and large—settle payments at the Federal Reserve through their accounts and balances at the Federal Reserve Banks (Reserve Banks).⁹ This core central banking function stems from the Federal Reserve’s unique ability to transfer balances that are free of counterparty credit risk and provide certainty that payments between banks are complete.¹⁰ In addition to providing settlement, the Reserve Banks provide payment services to clear and settle check, ACH, and wire transfer payments between banks. The Reserve Banks also process these payments on behalf of the U.S. Treasury in their capacity as fiscal agents.¹¹

Through the services that it provides to the banking industry and the U.S. government, the Federal Reserve seeks to foster the safety and efficiency of the payment and settlement system. In doing so, the Federal Reserve provides payment and settlement services on an

⁹ Section 13(1) of the Federal Reserve Act (FRA) permits Reserve Banks to receive deposits from member banks or other depository institutions. 12 U.S.C. 342. Section 19(b)(1)(A) of the FRA includes as depository institutions any federally insured bank, mutual savings bank, savings bank, savings association, or credit union, as well as any of those entities that are eligible to make application to become a federally insured institution. 12 U.S.C. 461(b). In addition, there are certain statutory provisions allowing Reserve Banks to act as a depository or fiscal agent for the U.S. Treasury and certain government-sponsored entities (*See e.g.*, 12 U.S.C. 391, 393-95, 1823, 1435) as well as for certain international organizations (*See e.g.*, 22 U.S.C. sections 285d, 286d, 290o-3, 290i-5, 290j-3). In addition, Reserve Banks are authorized to offer deposit accounts to designated financial market utilities (12 U.S.C. 5465), Edge and Agreement corporations (12 U.S.C. 601-604a, 611-631), branches or agencies of foreign banks (12 U.S.C. 347d), and foreign banks and foreign states (12 U.S.C. 358).

¹⁰ As mentioned earlier, these balances are referred to as central bank money. The Committee on Payment and Market Infrastructures defines central bank money in its glossary of terms as “a liability of a central bank, in this case in the form of deposits held at the central bank, which can be used for settlement purposes.” Available at <https://www.bis.org/cpmi/publ/d00b.htm>.

¹¹ Additional information about the Federal Reserve’s role in the payment system is available in “The Federal Reserve System Purposes & Functions,” October 2016. Available at <https://www.federalreserve.gov/aboutthefed/pf.htm>.

equitable basis and maintains a fundamental commitment to competitive fairness, which is essential to fostering end-user choice and innovation across the financial services sector as a whole.

When evaluating the potential introduction of a new payment service or major enhancements to an existing service, the Federal Reserve looks to its statutory obligations as well as long-standing principles and criteria.¹² These include expectations that (i) the Federal Reserve will achieve full cost recovery over the long run, (ii) the service will yield a clear public benefit, and (iii) the service is one that other providers alone cannot be expected to provide with reasonable effectiveness, scope, and equity.¹³ The Board also conducts a competitive-impact analysis for any new service or major enhancement that would have a direct and material adverse effect on the ability of other service providers to compete effectively with the Federal Reserve in providing similar services.¹⁴ Recently, at the request of Congress, the Government Accountability Office (GAO) conducted a review of the Federal Reserve's role in providing payment services and the effect of the Federal Reserve on competition in the market for payments. The GAO found that the activities of the Federal Reserve in the payment system generally have been beneficial, with benefits that include lowered cost of processing payments for end users.¹⁵

¹² See Monetary Control Act of 1980, Pub. L. No. 96-221, 94 Stat. 132 (1980). The Federal Reserve also considers, as appropriate, the effect of a potential new service or major enhancement on other critical missions, including conducting monetary policy and promoting financial stability.

¹³ See Board of Governors of the Federal Reserve System, "The Federal Reserve in the Payments System," Issued 1984; revised 1990. Available at https://www.federalreserve.gov/paymentsystems/pfs_frpaysys.htm.

¹⁴ See *id.* at Competitive-Impact Analysis for more information on what the Board considers in a competitive-impact analysis.

¹⁵ See U.S. Gov't Accountability Off., GAO-16-614, "Federal Reserve's Competition with Other Providers Benefits Customers, but Additional Reviews Could Increase Assurance of Cost Accuracy" (2016.) Available at <https://www.gao.gov/products/GAO-16-614>.

In addition to providing payment and settlement services, the Federal Reserve plays other roles, including serving as a convener of industry stakeholders, in support of its mission to foster safety and efficiency of the payment and settlement system. The next section discusses the broad initiative that the Federal Reserve launched five years ago to collaborate with the payment industry to foster payment system improvements.

C. Background on the Strategies for Improving the U.S. Payment System Initiative

Beginning in 2013, the Federal Reserve established a new initiative—Strategies for Improving the U.S. Payment System (SIPS)—with the objective of engaging with the payment industry and other stakeholders to upgrade and enhance the nation’s payment system. The collaborative work began with a consultation paper that requested public views on gaps, opportunities, and desired outcomes related to the goal of improving the speed and efficiency of the U.S. payment and settlement system from end-to-end while maintaining a high level of safety and efficiency.¹⁶ The consultation paper prompted responses from a wide variety of payment industry stakeholders, including banks, processors and other nonbank providers of payment services, technology firms, and business end users.¹⁷

Based on responses to the initial consultation paper, the Federal Reserve published in 2015 a set of strategies that it would pursue in collaborative engagement with payment industry stakeholders to improve the safety and efficiency of the U.S. payment and settlement system.¹⁸

¹⁶ The Federal Reserve Banks, “Payment System Improvement – Public Consultation Paper,” September 10, 2013. Available at https://fedpaymentsimprovement.org/wp-content/uploads/2013/09/Payment_System_Improvement-Public_Consultation_Paper.pdf.

¹⁷ The responses are available at <https://fedpaymentsimprovement.org/about/consultation-paper/>.

¹⁸ Federal Reserve System, “Strategies for Improving the U.S. Payment System,” January 26, 2015. Available at <https://fedpaymentsimprovement.org/wp-content/uploads/strategies-improving-us-payment-system.pdf>.

For faster payments, the specific strategy was to “identify effective approach(es) for implementing a safe, ubiquitous, faster payments capability in the United States.” This 2015 paper identified a number of tactics for each strategy, including the establishment of an industry task force to pursue the strategy related to faster payments.¹⁹

In 2015, the Federal Reserve also convened the Faster Payments Task Force (FPTF), a 320-member group comprised of banks of varying sizes, nonbank providers of payment services, business and government end users, consumer interest organizations, governmental organizations, and other industry participants.²⁰ In order to evaluate possible faster payment services, the task force developed a set of effectiveness criteria.²¹ These criteria addressed various features of a faster payment service, including ubiquity, efficiency, safety and security, and speed.²²

The FPTF’s effectiveness criteria provide important benchmarks for both end-user capabilities of faster payments and interbank settlement arrangements. With respect to service availability and payment speed for end users, the FPTF viewed service availability on any day, at any time of the day (that is, 24x7x365 service availability), and final funds provided to the recipient within one minute as characteristics of a “very effective” faster payment service.²³ With

¹⁹ In addition to the task force on faster payments, other efforts under the SIPS initiative have included a Secure Payments Task Force and a Business Payments Coalition. More information on these efforts and the broader SIPS initiative is available at <https://fedpaymentsimprovement.org/>.

²⁰ Information about the FPTF and its participants is available at <https://fasterpaymentstaskforce.org/>.

²¹ Faster Payments Task Force, “Faster Payments Effectiveness Criteria,” January 26, 2016. Available at <https://fedpaymentsimprovement.org/wp-content/uploads/fptf-payment-criteria.pdf>.

²² The FPTF developed the criteria to evaluate “faster payment solutions,” where the FPTF defined a “faster payment solution” as “the collection of components and supporting parties that enable the end-to-end payment process.” This definition is analogous to the concept of a “faster payment service” that is used in this notice.

²³ See “Faster Payments Effectiveness Criteria,” *supra* note 21 at criteria U.2 (Usability) and F.3 (Fast Availability of Good Funds to the Payee). In this notice, references to “real time,” “instant,” and “immediate” are intended to

respect to interbank settlement, the FPTF considered a faster payment service to be “very effective” if, among other things, (i) interbank settlement occurs within 30 minutes of the completion of a faster payment for end users, (ii) the service manages credit and liquidity risks arising from any time lag between payment completion for end users and interbank settlement, particularly if the service is available to end users on a 24x7x365 basis but interbank settlement is not, and (iii) interbank credit exposures related to settlement can be fully covered.²⁴ As subsequent sections of this notice will explain, these criteria reflect the importance of the speed of interbank settlement given the speed of faster payments for end users and the risk, specifically credit risk, that results when interbank settlement is slower. The Board recognizes that interbank settlement for faster payments using existing settlement services offered by the Reserve Banks would be unable to meet fully the FPTF’s criteria.

In its final report, released in 2017, the FPTF published a set of consensus recommendations for achieving its vision of ubiquitous, safe, and efficient faster payment capabilities for the United States.²⁵ As part of its recommendations, the task force asked the Federal Reserve (i) to develop a 24x7x365 settlement service to support faster payments and (ii) to explore and assess the need for other Federal Reserve operational role(s) in faster payments.

denote availability of final funds within one minute, consistent with the task force’s criteria for a service to be very effective, and ideally within just a few seconds.

²⁴ See “Faster Payments Effectiveness Criteria,” *supra* note 21 at criteria F.4 (Fast Settlement among Depository Institutions and Regulated Non-bank Account Providers) and S.4 (Settlement Approach).

²⁵ See Faster Payments Task Force, “Final Report Two: A Call to Action,” July 2017. Available at <https://fedpaymentsimprovement.org/wp-content/uploads/faster-payments-task-force-final-report-part-two.pdf>. In its recent report on the financial system, the U.S. Treasury recommended that the Federal Reserve set public goals consistent with the FPTF’s final report. See “A Financial System That Creates Economic Opportunity: Nonbank Financials, Fintech, and Innovation,” *supra* note 7.

Following that report, the Federal Reserve stated its intention to pursue these recommendations.²⁶

D. Summary of Potential Actions by the Federal Reserve

The Board has worked with the Reserve Banks to identify the potential actions described in this notice. The Board believes it is important to present these conceptual approaches for supporting interbank settlement of faster payments to the public and to gather initial public comments while faster payment services are still in the early stages of their development. The Board is not committing to any further actions at this time or in the future, but is committed to transparent communication with the public after analyzing the responses to this notice and determining further steps, should any be taken. As outlined earlier, any new services or service enhancements proposed by the Board would be expected to meet longstanding principles and criteria established under Federal Reserve policy as part of meeting its statutory requirements and would also be subject to request for public comment.²⁷

First, the Board is seeking comment on whether the Reserve Banks should consider developing a service for real-time gross settlement (RTGS) of faster payments that is available to conduct settlement on a 24x7x365 basis (24x7x365 RTGS settlement service). Such a service would involve interbank settlement of faster payments using banks' balances in accounts at the Reserve Banks. Reflecting the characteristics of faster payments, the service would provide payment-by-payment interbank settlement in real time and at any time, on any day, including weekends and holidays. A 24x7x365 RTGS settlement service could be similar, in certain

²⁶ The Federal Reserve System, "Federal Reserve Next Steps in the Payments Improvement Journey," September 6, 2017. Available at <https://fedpaymentsimprovement.org/wp-content/uploads/next-step-payments-journey.pdf>.

²⁷ See "The Federal Reserve in the Payments System," *supra* note 13.

respects, to the Fedwire[®] Funds Service, the RTGS service that the Reserve Banks currently provide for banks to clear and settle payments on behalf of their customers and for their own purposes.²⁸

Second, the Board is seeking comment on whether the Reserve Banks should consider developing a liquidity management tool that would operate on a 24x7x365 basis in support of services for real-time interbank settlement of faster payments, whether those services are provided by the private sector or the Reserve Banks (liquidity management tool). Such a tool would enable movement of funds during hours when traditional settlement systems are not open (nonstandard business hours) between banks' master accounts at the Reserve Banks and an account (or accounts) at the Reserve Banks used to conduct or support 24x7x365 real-time settlement of faster payments.²⁹ A liquidity management tool could involve simultaneous liquidity transfers among multiple accounts that are coordinated by an authorized agent in the settlement process and could be based on the existing National Settlement Service (NSS) or a similar service.³⁰ Alternatively, the tool could involve individual bank-initiated transfers between specific sets of accounts and could function similarly to the existing Fedwire Funds Service or a similar service. Regardless of its structure, such a tool would enable transfers to support liquidity (or funding) needs associated with real-time settlement of faster payments during nonstandard business hours, such as weekends and holidays.

²⁸ In contrast to a potential 24x7x365 RTGS settlement service, the Reserve Banks' Fedwire Funds Service does not operate 24x7x365. Much of the value transferred through the Fedwire Funds Service reflects large-value, time-critical payments between banks.

²⁹ A master account is the record of financial rights and obligations between account-holding banks and a Reserve Bank. The account is where opening, intraday, and closing balances are determined.

³⁰ NSS is a multilateral settlement service offered to banks that settles for participants in private-sector clearing and settlement arrangements. The service requires a designated agent to submit a settlement file to a Reserve Bank, which initiates debits and credits to participant accounts at the Reserve Banks.

Later sections of this notice expand on these possible actions to support interbank settlement of faster payments, as well as the general concepts that underlie them. The Board is seeking input on the proposition that RTGS is the appropriate strategic foundation for interbank settlement of faster payments. The Board is also seeking input on whether the provision of a 24x7x365 RTGS settlement service and a liquidity management tool, separately or in combination, would help achieve the goals of ubiquitous, nationwide access to safe and efficient faster payments in the long run. The Board is further interested in receiving comment about whether other approaches, not explicitly considered in this notice, might help achieve those goals.

II. Discussion of Faster Payments

A. General Elements of a Payment

Payments are essential to the conduct of economic activity. When a good is purchased, a service is rendered, or a debt is repaid, a payment is typically involved. For example, an individual's purchase of a product from a business involves the business providing something of value, namely the product itself, to the buyer. As compensation for the product, the business needs to receive something of financial value from the buyer in return. This act of transferring financial value from the buyer to the seller, or, more generally, from one party in a transaction to another, constitutes a payment.

In the United States, as in other modern economies, the value transferred in a payment typically involves monetary assets. Individuals, households, businesses, and other parties in the economy (for example, governments and nonprofit organizations) hold these monetary assets in various forms. For example, some monetary assets may be held as currency and coin. Other monetary assets may involve funds held with specialized financial institutions. In the United

States, deposits in accounts with banks comprise the monetary asset that is most widely held by the general public to conduct payments.³¹

In broad terms, the function of the payment and settlement system is to enable the transfer of these monetary assets between their holders for the purposes of exchanging value to pay for goods and services, remitting funds to pay bills and meet other obligations, managing business balance sheets, and conducting other activities. This transfer can occur in various ways. For example, in a face-to-face payment, the handover of currency serves to transfer a monetary asset from the individual to the business and, hence, to complete a payment between them. When the monetary asset used for payment is deposits held in accounts with banks or other institutions, transfers require adjustments to the amount of funds in the respective accounts of each party in a payment. Thus, the balance in the individual's account with their bank must be decreased by the amount of the purchase, and the balance in the business's account with its bank must be increased by the same amount.

To make these adjustments, the banks involved in a payment must have a way to receive and exchange payment messages. A payment message typically contains information related to the payment, such as the identities of the parties involved, relevant account information, and the payment amount. Without a payment message and a method to exchange it, the banks involved in a payment would not know the details of a payment or even be aware of an end user's need to conduct it.

³¹ As of July 2018, the value of transferable deposits held by the public, including demand deposits and other checkable deposits, was \$2.09 trillion, while the value of currency in circulation outside banks was \$1.59 trillion. See Federal Reserve Board, "Money Stock and Debt Measures – H.6 Release, Table 5" available at <https://www.federalreserve.gov/releases/h6/current/default.htm>.

The payment between end users and associated payment message generates an obligation between the respective banks. The banks must have a mechanism to conduct a transfer of assets between one another to settle the payment. Without a mechanism to settle the interbank obligation, the banks would not have transferred the underlying funds to complete the payment.

These activities, which are known as clearing and interbank settlement, involve processes, infrastructure, rules, agreements, and law that ultimately allow end users, such as an individual and a business, to conduct payments using accounts held with banks or other institutions.

B. Levels of the Payment Process

To complete a payment between two bank accounts, three key levels of the payment process are necessary: end-user services, clearing services, and interbank settlement services.³² Together, these three levels comprise a “payment service” or, as will subsequently be discussed, a “faster payment service” in the case of a payment service focused on faster payments.³³ In other words, a payment service encompasses everything that goes into providing an individual, a business, or another end user with the ability to conduct a payment. Figure 1 depicts the levels of the payment process when the sender initiates a payment through their bank.

³² This discussion focuses on a situation in which the parties to a payment hold accounts with different banks or, more broadly, different financial institutions. If these parties hold accounts with the same institution, that institution may be able to conduct payment activities internally through, for example, adjustments to an internal ledger of account balances. This scenario can apply to payments within a single bank, yielding what is termed an “on-us” transaction. It also applies to many payment services provided by nonbanks.

³³ A legal framework that governs the conduct of payments is also necessary and may apply across levels of the payment process. This framework may be in the form of laws, regulations, rules, or contractual agreements, which collectively determine the rights and obligations of the participants, such as end users, in the payment process. The legal framework may provide, among other things, for error resolution and fraud protection for end users. Legal requirements related to anti-money-laundering and economic sanctions may also affect the design and operation of a payment system.

An end-user service includes the tools that an individual or business uses to conduct a payment. For example, an individual wishing to pay a bill to a utility company or send money to a friend may be able to do so through a mobile phone application. Similarly, a business may be able to initiate a payment to a vendor through a bank's website. Such services allow an end user to communicate with their bank about the need to make a payment and the details of that payment. In other words, end-user services support the exchange of payment messages and other information between a bank and its end-user customers. End-user services also include other critical aspects of the overall payment experience for an individual or business, such as error resolution procedures and security measures to mitigate fraud.

Clearing services and interbank settlement services constitute the infrastructure underlying payment services involving bank accounts. These services and the activities they perform may not be apparent to end users, but they are crucial to the transfer of information and value between banks, so that the sender of a payment can satisfy their obligation to the recipient of a payment.

In clearing services, the sending and receiving banks interact, possibly through an intermediary such as a clearing house, based on the payment information received from end users and the protocols associated with a payment service. A key element of this interaction is the exchange of the payment message between the sending and receiving banks.³⁴ The payment messages that are exchanged contain the necessary information for banks to make appropriate

³⁴ Other clearing activities include sorting and routing of payment instructions, ensuring that payment instructions comply with service-specific rules and limits, and calculating and communicating interbank obligations that arise from payment instructions. Clearing activities may also include screening for fraudulent payments and other risk-management measures.

debits and credits to the accounts of their end-user customers and to notify their customers of those adjustments to account balances.

Finally, in interbank settlement services, the sending and receiving banks transfer assets to each other to satisfy the interbank obligations that arise from end-user payments. Settlement takes place by adjusting the balances in banks' settlement accounts on the books of a settlement institution. For example, interbank settlement can be performed by directly adjusting balances in accounts that banks hold with the central bank or a commercial bank.

Figure 1: Levels of the Payment Process

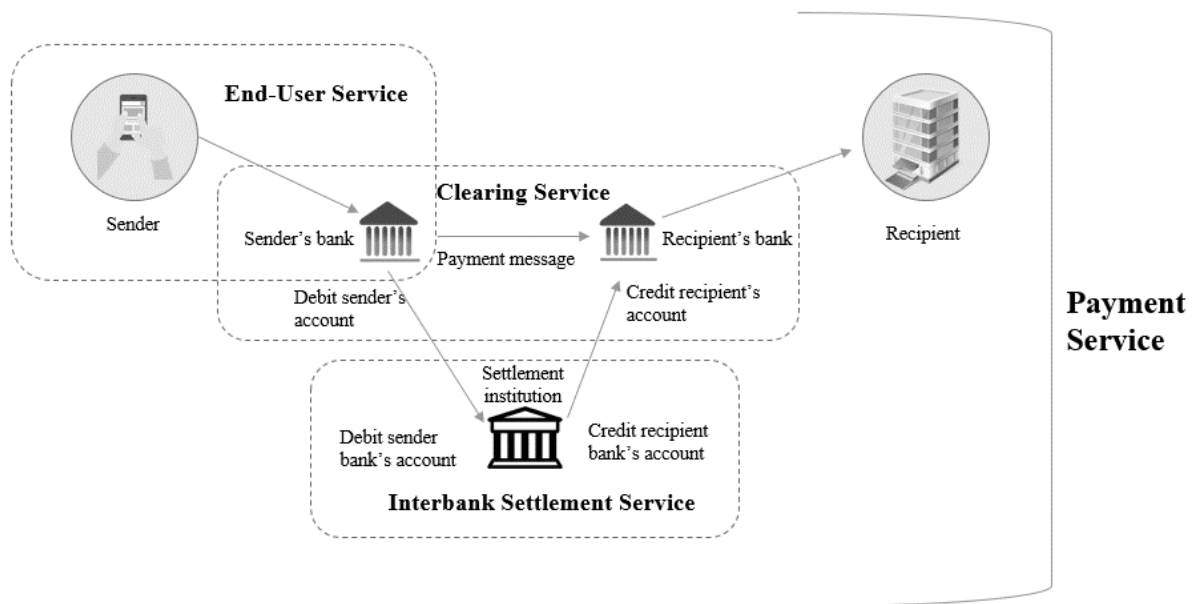


Figure 1 depicts the levels of the payment process. The end-user service allows an individual, household, or business to initiate a payment to its bank. In this example, an individual wishes to pay a bill to a utility company through a mobile phone application. Clearing includes the exchange of the payment message between a sender and recipient's bank via a payment network. The payment message contains the information for banks to make debits and credits to the sender and receiver's accounts. Settlement occurs when banks transfer assets on the books of a settlement institution to satisfy the interbank obligation created by the end-user payment.

C. An Overview of Faster Payments

In a faster payment, the three levels of the payment process are structured so that senders can immediately initiate, and recipients can immediately receive, payments at any time.³⁵ At the end-user service level, the sender of a payment must have an interface that allows real-time communication at any time to initiate a payment. This need for instant and always-available communication capabilities for end users explains why faster payments are often associated with payments initiated through computers or mobile devices.

At the clearing level, certain activities must similarly happen in real time and at any time. In particular, the messaging between banks must occur in real time on a 24x7x365 basis, so that, at any time of the day, the banks involved in a payment are able to send and receive payment messages immediately, such that they can debit and credit their customers' accounts. By contrast, in certain traditional payments, the payment message exchange can occur sometime after an end user initiates a payment. As will be discussed in more detail in the next section, however, the interbank settlement level of a faster payment service may or may not exhibit the same speed and availability as end-user and clearing services.

Although the previous discussion focused on activities related to faster payment services involving banks, several established services in the United States that allow end users to conduct faster payments are provided by nonbank entities. These nonbank payment services usually combine all three levels of the payment process. These services often focus on enabling impromptu payments between individuals, such as friends or family members, although some also handle a wider array of payment situations, such as payments between individuals and

³⁵ Rules or agreements that govern the conduct of faster payments are also necessary. Among other things, these rules or agreements will specify end-user rights and obligations associated with a faster payment.

businesses. Such a service typically provides an online portal or mobile application that allows parties who have signed up with the service to send payments to each other. The service executes payments through adjustments to balances of the sender's and recipient's service-specific accounts, which are located on the service's internal books.³⁶ Because end users can quickly communicate with the service, which can then rapidly make internal adjustments to end-user balances, such a service allows registered end users to conduct immediate payments at any time. However, such capabilities are only possible when both the sender and receiver of a payment have signed up with a specific service. In addition, the balances are only immediately usable within that specific service. Transfers of funds out of a nonbank service into bank accounts that are held for general use typically involve transactions through traditional payment systems that can take more than a day to complete.³⁷

Recently, other faster payment services have emerged in the United States that are based on transfers between bank accounts. These include services that allow end users to send or receive faster payments using the debit card infrastructure of certain payment card networks and services that allow faster payments over newer proprietary payment networks owned by groups of banks. The end-user service can involve a service-specific website or mobile application or may be integrated into a participating bank's website or mobile application, similar to many existing online bill payment services. For business customers, the end-user service may be integrated into a bank's back-end payment processing infrastructure. To use these services, end

³⁶ As noted in footnote 32, nonbank entities can often conduct key activities related to payments on an internal ledger of account balances.

³⁷ A nonbank service's internal ledger of end-user account balances is generally backed by a deposit account or accounts that the nonbank service holds with one or more banks. Transfers by a service's customers to fund or defund their service-specific accounts involve payments between the customers' bank accounts and the service's bank account(s). These funding and defunding transfers typically occur via payment card networks or the ACH system.

users must typically sign up with a specific service through their banks or, in some cases, may sign up directly with the service itself. Because the sending and receiving end users may hold their accounts at different banks, their banks must exchange payment messages as part of clearing. These interbank clearing activities can occur through existing payment card networks or proprietary communication networks of the bank-owned services. To enable their customers to make payments through a specific faster payment service, banks must participate in the service or otherwise be capable of receiving payment messages initiated through the service. Interbank settlement must also occur, allowing the banks to transfer assets reflecting their customers' faster payments. At present, interbank settlement for these services is largely conducted through existing services provided by the Reserve Banks and, in one case, is performed using a private sector-owned settlement ledger that is backed by funds in a "joint account." A joint account is a recently announced type of account held at a Reserve Bank that holds balances for the joint benefit of settling banks in a private-sector settlement service.

The interbank settlement models discussed in this notice specifically focus on faster payment services that involve transfers between bank accounts and do not directly address services provided by nonbank entities. At the same time, many nonbank faster payment services ultimately use deposit accounts at banks to hold funds associated with their customers' balances and further rely on established interbank payment systems for the movement of money between their customers' bank accounts and service-specific accounts. Nonbank faster payment services may also have access to Reserve Bank services when acting as agents on behalf of banks that participate in their services. As a result, interbank clearing and settlement capabilities may have implications for both bank and nonbank faster payment services.

III. Faster Payment Interbank Settlement Models

As defined above, faster payment services involving transfers between bank accounts must conduct certain activities in real time on a 24x7x365 basis. In particular, such services must accept payment messages from end users, exchange payment messages between banks, and make final funds available to recipients in real time and at any time. However, interbank settlement can be performed in two ways: on a deferred basis or in real time. These two models have important distinguishing features with risk, liquidity management, and other implications.

A. *Deferred Net Settlement of Interbank Obligations*

In a deferred settlement arrangement for faster payments, final funds are made available to the end-user recipient *before* interbank settlement occurs. In such an arrangement, individual payment messages are exchanged in real time between the sender's bank and the recipient's bank. The banks adjust their customer balances to reflect the outflow of funds for the sender and the inflow of funds for the receiver, and the recipient's bank immediately makes final funds available to its customer. The interbank settlement information resulting from the individual payments is collected and stored by a centralized entity (for example, a clearinghouse) for a period, such as a certain number of hours or until the next business day, before interbank settlement occurs. In some cases, settlement may be deferred for several days over weekends or holidays, depending on whether the system used for settlement is available then. Around the world, most existing implementations of deferred settlement for faster payments involve netting of interbank obligations prior to settlement, yielding what is termed deferred net settlement (DNS).³⁸ In a DNS arrangement, the centralized entity that collects and stores interbank settlement information offsets payment obligations owed by a bank with payment obligations

³⁸ See "Fast payments – Enhancing the speed and availability of retail payments," *supra* note 5.

due to that bank. After collecting and netting settlement information related to groups of payments, the centralized entity submits information on net obligations to an interbank settlement system, which then adjusts the account balances of all participating banks on the settlement institution's books. Alternatively, rather than relying on a centralized entity, participating banks may initiate a series of funds movements to settle the net obligations. The process of collecting, netting, and then settling a group of payments is known as a settlement cycle.

The Board understands that, at present, most faster payment services in the United States that involve transfers between bank accounts are based on a DNS model for interbank settlement. In these services, interbank settlement of net obligations is conducted using traditional payment and settlement systems, namely the Fedwire Funds Service or the ACH system, with the timing and frequency of settlement depending on, among other things, the operating hours of those systems.³⁹

A number of factors may contribute to the current prevalence of DNS-based arrangements for faster payment services in the United States. First, traditional payment and settlement systems, which can be leveraged for settlement of faster payments, already have widespread participation by banks. In addition, by using the Fedwire Funds Service or the ACH system, banks can treat settlement payments for faster payment services much like other interbank payments, without the need to implement new faster payment settlement capabilities and operational procedures. As a result, it may be easier for banks to become participants in these faster payment services. Finally, DNS-based faster payment services can be attractive from

³⁹ The Reserve Banks' National Settlement Service is used by some DNS-based systems that do not involve faster payments.

a liquidity management perspective because netting reduces balances that banks need to set aside to settle obligations related to faster payments.

At the same time, DNS arrangements for faster payments involve inherent risks that need to be managed. Because the recipient's bank makes final funds available to the recipient before interbank settlement occurs, DNS arrangements for faster payments inherently generate interbank credit risk for the recipient's bank. If a sending bank in the arrangement fails to pay a net obligation, receiving banks are at risk of losing the full value of funds that they have already made available to recipients.⁴⁰ In addition, this scenario could generate liquidity risks for receiving banks if, subsequent to a sending bank's failure to pay, settlement amounts are recalculated and banks may receive less or have to pay more than expected. Such credit and liquidity risks may become particularly pronounced if, as the 24x7x365 nature of faster payments would allow, rapid withdrawals from a troubled bank were to occur outside standard business hours, increasing credit exposures and liquidity needs for receiving banks. During a period of financial stress, these risks could also further aggravate financial stability concerns.

The interbank settlement risks created in a DNS-based faster payment service may be mitigated with appropriate risk management tools. Potential tools include (i) transaction limits on individual payments or frequent settlement cycles to help prevent the emergence of large net interbank exposures, (ii) loss-sharing agreements among participants in a system to help spread the risk of a settlement failure, (iii) limits on the net negative position of each participating bank to prevent interbank exposures from becoming too large, and (iv) collateralization to back

⁴⁰ The risk can be particularly acute with the use of the ACH system given the time delay between file submission of the ACH payment to settle the net obligation and the actual settlement of those ACH payments at specified times during the day or next day. Debit ACH payments, if used in the settlement process, also are not final upon settlement. The extra time lapse in ACH processing and settlement and the lack of final settlement for debit ACH payments, if used, can add to interbank credit risk.

settlement activity if one or more participants were not able to meet their obligations. Credit and liquidity risk exposures can be fully mitigated by requiring participants in a DNS-based faster payment service to prefund potential exposures fully with cash held at a custodial institution, with an enforceable limit on payment transactions to prevent interbank settlement exposures from exceeding the covering funds or, potentially, a mechanism to augment prefunded cash collateral when needed. Under this risk-management structure, if a participant in a DNS system is unable to fund its settlement obligations, the obligations could be covered with prefunded cash, allowing the settlement payments to be completed and avoiding the need to recalculate settlement obligations.

In other countries, every faster payment service based on a DNS model employs measures to mitigate the resulting interbank settlement risk.⁴¹ Most recent international examples of DNS-based faster payments typically use full cash prefunding, a risk-management approach that is reflected in the FPTF's effectiveness criterion related to full coverage of interbank credit exposures. A prominent example of full risk mitigation occurs in the United Kingdom, where faster payment participants settle their positions three times per business day using accounts at the Bank of England. Each participant in the system sets its own "net sender cap" that limits the participant's negative position between settlement cycles. Since 2015, these caps have been fully backed by cash collateral held in segregated accounts at the Bank of England to mitigate the overnight interbank credit risk generated by the system. In the event that a participant were unable to meet its obligation in a settlement cycle, the participant's cash collateral at the Bank of England would be immediately accessed to conduct settlement.

⁴¹ See "Fast payments – Enhancing the speed and availability of retail payments," *supra* note 5.

In addition to risk management, DNS-based faster payment services may have liquidity management implications. On the one hand, liquidity management may be simplified for banks in a DNS arrangement because netting reduces the funds that banks need to have available for settlement obligations related to faster payments. In addition, because settlement is conducted periodically, often at pre-defined times, banks in a DNS arrangement do not need to provide sufficient funds on a real-time basis to settle faster payments that are otherwise taking place in real time. On the other hand, if a DNS-based service were to use frequent settlement cycles to manage credit risk exposures, banks would need to ensure that they have adequate liquidity whenever a settlement cycle occurs. For example, if it were possible to conduct the 30-minute settlement cycles that would be applied in a DNS arrangement satisfying the FPTF's effectiveness criterion related to settlement speed, that settlement frequency would require banks to monitor and manage their liquidity over the weekend and on holidays.

Furthermore, collateral management may have implications for banks participating in a DNS-based faster payment service that employs collateral to mitigate interbank credit risk. The availability of adequate collateral to cover a bank's net obligation would need to be verified in real time for each individual faster payment, with payments being rejected when collateral is inadequate. As a result, cash or collateral to back settlement activity in a DNS arrangement would need to be monitored, maintained, and potentially adjusted on a real-time basis, including during nonstandard business hours, to avoid rejected payments.⁴² Alternatively, banks could elect to maintain higher cash or collateral balances to hedge against unexpected payment

⁴² The need for collateral management during nonstandard business hours in a DNS arrangement for faster payments is similar to the need for liquidity management during nonstandard hours in an RTGS arrangement. As a result, to avoid rejected payments resulting from insufficient collateral, a collateral management tool, which could be similar to the liquidity management tool discussed in the context of RTGS arrangements, may be needed in a DNS arrangement.

volumes; however, this choice would have other implications for banks and their ability to use cash or collateral for other purposes.

Another consideration for DNS-based faster payment services is that interoperability between services that use different risk and liquidity management arrangements may be challenging, which can be a barrier to faster payment ubiquity if end users are not able to send payments across services. For faster payment services to be interoperable, each service should have the ability to receive transactions originated from the other service and to manage the associated cross-service settlement risks.⁴³ Interoperability would likely be harder to achieve if two services and their chosen settlement features generate different levels of interbank settlement risk or if they use different tools to mitigate such risk.

B. Real-Time Gross Settlement of Interbank Obligations

In an RTGS arrangement for faster payments, final funds are made available to the recipient only after interbank settlement has occurred between the banks that are party to the transaction. To ensure this outcome, RTGS-based faster payments involve both completion of end-user payments and settlement of interbank obligations on a payment-by-payment basis in real time and at any time. RTGS for faster payments thus aligns the speed and 24x7x365 availability of interbank settlement with the speed and 24x7x365 availability of faster payments for end users. In such an arrangement, because the speed and timing of interbank messaging activities needed to support faster payments for end users coincide with the speed and timing of interbank settlement activities, it can be possible to avoid duplicative activities by combining

⁴³ Currently, interoperability agreements do not exist among payment card networks or wire operators. The only interoperability agreement is in the ACH system between FedACH, provided by the Reserve Banks, and the private-sector Electronic Payments Network.

interbank messaging and settlement.⁴⁴ As a result, a single payment message may be sent from the sender's bank to the recipient's bank through the settlement service with that message containing both the information needed by the banks to adjust their customers' balances and the bank information necessary to conduct interbank settlement.

RTGS arrangements inherently avoid interbank settlement risk because funds are made available to the recipient only after interbank settlement has occurred. This key feature enhances the safety of faster payment services based on the RTGS model, both for individual banks and in the aggregate, particularly during times of financial stress. The lack of inherent interbank settlement risk eliminates the need for measures to mitigate such risk, as would be needed in a DNS arrangement. In addition, by aligning interbank settlement with interbank messaging, the RTGS model can avoid activities, such as storing, netting, and submitting groups of payments for settlement, that are not generally relevant for the provision of faster payments to end users, but would be necessary in DNS-based faster payment services because of the timing mismatch between settlement and the underlying payments. In the process, the RTGS model also avoids the unanticipated liquidity effects that can occur in the event of a settlement failure when interbank settlement positions have been netted by a centralized entity. Finally, when considering interoperability between RTGS-based faster payment services, the lack of interbank settlement risk in such services may facilitate interoperability by avoiding the need to reconcile measures to mitigate cross-system settlement risk, in particular, as may be necessary with DNS-based faster payment services.

⁴⁴ For purposes of this notice, in an RTGS model, messaging and clearing can be considered synonymous since, beyond real-time message transmission, the other components of clearing that are necessary in a DNS model, such as netting of payments for settlement, are not relevant. Messaging activities may still include other risk-management measures, such as screening for fraudulent payments and ensuring that payment instructions comply with service-specific rules and limits.

At the same time, real-time settlement for faster payments may have liquidity management implications. Because RTGS-based faster payment services process and settle each payment separately, with continuous updates to settlement accounts on a 24x7x365 basis, participants in an RTGS-based service may need to monitor and manage their settlement accounts outside standard business hours to ensure that balances are available to settle each payment. Further, even for retail payment systems, gross settlement may be more liquidity intensive than net settlement.

Based on the design, liquidity management may require tools to reallocate liquidity to support settlement of faster payments. For example, if settlement for an RTGS-based service is conducted in an account that is separate from a bank's primary settlement account (that is, a Federal Reserve master account), a liquidity management tool could allow for banks or an agent acting on their behalf, such as the provider of an RTGS service, to move liquidity to the faster payment settlement account when needed. Alternatively, liquidity management could involve automatic replenishment of the faster payment settlement account from the primary account, based on certain parameters or at certain times of the day. Liquidity management tools are discussed later in the notice.

Another consideration for RTGS-based faster payments is that faster payment services to end users are dependent on uninterrupted availability of the RTGS service to conduct faster payments. Although faster payments based on deferred settlement would require certain clearing activities to occur in real time and at any time, necessitating a high level of resiliency for those activities, end-user payments could still be completed even if the interbank settlement service is temporarily unavailable. In contrast, an RTGS service supporting faster payments would require advanced throughput capabilities and high resiliency of both the settlement service and

messaging activities. In addition, to avoid failed end-user payments, enhanced contingency arrangements may be necessary to deal with situations when a primary RTGS processing service is temporarily unavailable to process transactions.

One example of an RTGS service for faster payments is the system being developed by the European Central Bank (ECB) to support “instant payments” in the European Union. Like faster payments in the United States, instant payments in the European Union are expected to involve services for real-time payments between end users that can be conducted on a 24x7x365 basis. To facilitate ubiquity of instant payment services across national jurisdictions, the ECB system will offer final settlement for instant payments using balances held at the ECB (that is, central bank money) to banks and other eligible institutions across Europe. In line with 24x7x365 instant payment services for end users, the ECB’s system will enable settlement on a 24x7x365 basis. The ECB has announced that it will implement its instant payments RTGS system using separate, dedicated cash settlement accounts for each participating institution. The ECB plans to launch its instant payments RTGS system in November 2018.⁴⁵

Another example, albeit with a different approach, of an RTGS service for faster payments involves a system launched domestically in the United States in late 2017. This system, operated by a private-sector entity, performs immediate, round-the-clock settlement of payments on its private ledger, rather than using central bank money. Each participant in this arrangement relies on the presence of balances stored in a single joint account at a Reserve Bank

⁴⁵ More information about the ECB’s RTGS system for instant payments is available at <https://www.ecb.europa.eu/paym/initiatives/html/index.en.html>.

that is held for the benefit of the joint account-holding banks as a method of backing the private-sector service.⁴⁶

IV. Potential Federal Reserve Actions to Support 24x7x365 Real-Time Settlement of Faster Payments

Although both DNS and RTGS arrangements have benefits and drawbacks for settling faster payments, on balance, the Board views RTGS as offering clear benefits from a risk and efficiency perspective, making it the preferable basis for interbank settlement of faster payments over the long term in the United States. Given the round-the-clock availability of end-user faster payment services, real-time interbank settlement should likewise be possible at any time and on any day. While DNS-based faster payment services with measures to mitigate risk may be appropriate for a nascent faster payment market in the short term, the Board believes that, as the volume and value of faster payments grow in the future, an RTGS infrastructure would provide the safest and most efficient foundation for interbank settlement for the next generation of payment services. Through this notice, the Board is seeking views regarding this perspective on interbank settlement.

In addition, the Board is requesting comment about potential actions that the Federal Reserve could take to support a ubiquitous, nationwide infrastructure for 24x7x365 real-time settlement of faster payments. These actions, which could be taken separately or in combination, include the Reserve Banks' developing (i) a 24x7x365 RTGS settlement service and (ii) a

⁴⁶ A joint account enables settlement for participants in a private-sector arrangement to be backed by funds held for a special purpose at a Reserve Bank. Although the joint account is not formally a collateral account, the funds in the joint account are held for the joint benefit of the settling participants. Accordingly, the operator of a settlement arrangement that relies on a joint account can perform real-time, payment-by-payment settlement on its own ledger, which in turn reflects how the operator, as agent for the settling participants, will attribute the balances in the joint account on its own records to each settling participant. Settlement backed by a joint account can occur at any time or on any day because the settlement takes place on the ledger of the settlement-arrangement operator.

liquidity management tool. In addition to seeking comment on whether the Reserve Banks should consider developing either or both of these services, the Board is interested in receiving comment about whether other approaches would help achieve the long run goals of ubiquitous, nationwide access to safe and efficient settlement services for faster payments.

A. A 24x7x365 RTGS Settlement Service Provided by the Reserve Banks

1. Characteristics of a 24x7x365 RTGS Settlement Service

As one potential action, the Reserve Banks could provide a 24x7x365 RTGS settlement service for banks that would carry out the interbank settlement of individual payments immediately, on any day, and at any time of the day. Such a service would reflect the real-time speed and 24x7x365 nature of faster payments. The service would settle interbank obligations through debits and credits to balances in banks' accounts at the Reserve Banks, constituting settlement in central bank money.⁴⁷ As it does with some of its existing services, the Federal Reserve could allow agents to submit settlement instructions to a 24x7x365 RTGS settlement service on behalf of participating banks that hold accounts at the Reserve Banks.

A 24x7x365 RTGS settlement service could involve messaging functionality, which traditionally is considered part of the clearing level, and may function much like the Fedwire Funds Service. As with the Fedwire Funds Service, a 24x7x365 RTGS settlement service could receive and deliver the entire payment message, including bank routing information needed for interbank settlement and customer information needed by receiving banks to update their customers' accounts.⁴⁸ Under this design, the service would receive settlement instructions from

⁴⁷ The Board expects that such a service would be used for credit transfer payments in which the party that intends to make a payment initiates the payment to the recipient.

⁴⁸ An RTGS settlement service could be designed to optionally process either the full message with bank routing and customer information or only the bank routing information needed for interbank settlement. The latter use would

and deliver settlement notifications to the banks (or their agents) pursuant to the information in the payment message. As a result, the RTGS functionality could provide a straight-through processing method to conduct interbank clearing and settlement of faster payments.

The proposed 24x7x365 RTGS settlement service could make use of the existing electronic access connections and payment services network that the Reserve Banks provide to banks to enable secure payment processing for transactions involving Reserve Bank payment services. In addition, interbank settlement of faster payments could occur in Federal Reserve master accounts, similar to the way that settlement for other types of Reserve Bank payment services occurs, and could use the same account-monitoring regime that is in place for other payment services provided by the Reserve Banks. Alternatively, interbank settlement of faster payments could occur in separate, dedicated faster payment settlement accounts for each participating bank with balances that could be treated as reserves, earning interest and satisfying reserve balance requirements. With separate accounts, an approach would be needed for moving funds between a bank's master account and its faster payment settlement account during standard business hours and potentially outside those hours. In either account structure, the service would record end-of-day balances in the account and provide balance reports for each calendar day of the week (that is, a seven-day accounting regime). The Board is requesting comment on the advantages and disadvantages of these design options and features.

Additionally, a 24x7x365 RTGS settlement service might need to incorporate some auxiliary services or other service options in order to support an effective nationwide system.

require third parties to separately transmit the payment message between sending and receiving banks. These design choices may raise policy, legal, and operational complexities, such as achieving payment transparency for screening and other compliance-related requirements.

One example of an auxiliary service is a proxy database or directory that allows banks to route end-user payments using the recipient's alias, such as an e-mail address or phone number, rather than their bank routing and account information. Another example of auxiliary services is enhanced fraud-monitoring capabilities, which may involve a shared database of known fraudulent accounts or automated fraud detection tools. Other service options to consider include transaction limits to manage risk or payment-by-payment offsetting functionality to economize on the use of liquidity. The Board is requesting comment on whether such auxiliary services or other service options are necessary for broad adoption of faster payments and what entity(s) should provide them.

A 24x7x365 RTGS settlement service provided by the Reserve Banks would rely on banks and other parties, such as processors and other providers of payment services, to develop end-user services and, ideally, the full suite of auxiliary services, such as a proxy database or directory, that build upon the basic functionality of the settlement service.

2. Public Benefits of a 24x7x365 RTGS Settlement Service

The Federal Reserve's longstanding public policy objectives for the payment system are that payment systems are safe, efficient, and accessible to all eligible banks on an equitable basis and, through them, to the public nationwide.⁴⁹ Based on its analysis, the Board believes the Reserve Banks' development of a 24x7x365 RTGS settlement service could yield societal benefit by advancing these objectives and serve as an important part of the foundation for the nation's future payment system. The Board is requesting comment on whether the Federal

⁴⁹ See "The Federal Reserve in the Payments System," *supra* note 13.

Reserve's provision of a 24x7x365 RTGS settlement service will indeed offer these potential benefits.

Accessibility

A 24x7x365 RTGS settlement service provided by the Reserve Banks could significantly improve the long-term prospect of all banks having access to a real-time interbank settlement infrastructure for faster payments. Today, the Reserve Banks provide payment services to more than 11,000 banks—the vast majority of banks in the United States. By capitalizing on its electronic access network and customer relationships, the Reserve Banks are in a position to offer equitable access to real-time interbank settlement to all eligible banks in the country, regardless of type or size.

It may be difficult for the private sector to create an infrastructure that, on its own, could provide equitable access to enough banks to achieve ubiquity. Practically, a private-sector RTGS service that does not have existing relationships with a large number of banks may have difficulties establishing those relationships for a new service. Likewise, banks without an existing relationship to the provider of a private-sector RTGS service may find it cumbersome and time-consuming to establish connections with a new provider of settlement services. However, accessibility could be greatly enhanced if existing and potential future private-sector RTGS services were able to interoperate with a Reserve Bank service, such that end-user customers of any bank could send faster payments to end-user customers of any other bank, regardless of the faster payment RTGS service used by the banks. In such a scenario, private-sector and Reserve Bank RTGS services would work in tandem to provide ubiquitous, nationwide access to real-time interbank settlement for faster payments.

Safety

As noted above, real-time settlement for faster payments avoids interbank settlement risk by aligning the speed of interbank settlement with the speed of the underlying payments. If a 24x7x365 RTGS settlement service developed by the Reserve Banks were to significantly improve the prospect that banks nationwide would use real-time settlement for faster payments, the overall safety of the faster payment market in the United States could be enhanced. In addition, a service provided by the Federal Reserve, with its focus on the stability of the overall payment system, could also contribute to the real and perceived resiliency of faster payment settlement. This would be especially true if a 24x7x365 RTGS settlement service provided by the Reserve Banks were available alongside private-sector RTGS services, giving banks an option to connect to multiple operators for resiliency, as they often do with traditional payment systems. Finally, a 24x7x365 RTGS settlement service could further support the Federal Reserve's ability to provide payment system stability in moments of financial crisis or natural disaster, as it has done in the past with its cash, check, ACH, and wire transfer services.

Efficiency

Payment system efficiency has multiple facets, including resource costs, the value of broad networks, and competition between and innovation by faster payment services. While a 24x7x365 RTGS settlement service provided by the Reserve Banks would consume societal resources and could duplicate certain costs that may already have been incurred to set up other settlement arrangements for faster payments, its net effect on the efficiency of the faster payment environment would depend on the extent to which it generates societal benefits by improving bank participation in a real-time interbank settlement infrastructure and, ultimately, public access to safe and secure faster payment services. Specifically, the value of a payment system increases

as more banks join the system because all participants and end users can send payments to more recipients. As a result, incremental societal benefits realized through nationwide bank participation in a real-time interbank settlement infrastructure could outweigh the societal costs of the Reserve Banks developing a 24x7x365 RTGS settlement service.

Additional efficiency benefits could be realized through enhanced competition between and innovation by faster payment services. The development of a nationwide real-time interbank settlement infrastructure could play a strategic role in persuading more banks to develop faster payment services, creating more competition among bank-provided services and with existing nonbank services. Bank and nonbank providers of faster payment services may also be able to develop new or enhance existing services by capitalizing on the underlying interbank infrastructure. The resulting competition and innovation could ultimately benefit end users because competition typically generates lower costs and innovation advances feature-rich services.

The Board recognizes the possibility that introduction of a Reserve Bank-provided 24x7x365 RTGS settlement service could have the opposite effect and disrupt the existing faster payment market. Industry stakeholders have already made certain initial investments in faster payment services and would need to assess how, or if, to connect to a new settlement service.⁵⁰ Therefore, it is possible that Reserve Bank entry could add to market fragmentation and lower the prospects for ubiquitous faster payments in the United States, especially in the short run.

The Board also recognizes that the cost of investing in new technology for the banking industry, its customers, and service providers could be significant, and it could take many years

⁵⁰ If banks were to establish connections to multiple settlement services, doing so may generate a duplication of participant connection costs.

to achieve full participation across the banking system. Operational and technical challenges are inherent in the creation of any new service, and the fact that the envisioned RTGS settlement service would operate 24x7x365 may compound these challenges. The Board expects that moving to a 24x7x365 settlement environment may take a number of years of technical and operational adjustment for all stakeholders. In addition, issues with technical and operational adjustments may be exacerbated if there is more than one provider of real-time settlement. At the same time, some disruption and a period of adjustment could be acceptable, and often accompany foundational changes in infrastructure. The Board is seeking comment on whether the industry believes the costs of adjustment and potential disruption are outweighed by the benefits of the proposed interbank settlement infrastructure.

B. A Liquidity Management Tool

1. Liquidity Management Needs in RTGS-based Faster Payment Services

RTGS for faster payments can raise liquidity management issues for banks, particularly given the 24x7x365 nature of faster payments. RTGS-based faster payments require banks to have sufficient liquidity to perform interbank settlement of individual payments. Absent sufficient liquidity, banks, and by extension their customers, would experience failed faster payments because interbank settlement, which must occur prior to the provision of final funds to the recipient in an RTGS arrangement, could not take place. Moreover, because faster payments can occur on a 24x7x365 basis, RTGS for faster payments requires banks to have sufficient liquidity to settle individual payments at any time of the day, any day of the year.

The risk of failed payments caused by insufficient liquidity in an RTGS-based faster payment service implies a general need for banks to manage their liquidity related to settlement. The nature of this liquidity management will depend on the design of a particular RTGS

arrangement for faster payments. For example, a private-sector RTGS arrangement for faster payments may rely on a joint account at a Reserve Bank that backs settlement conducted on a private ledger maintained by the arrangement's operator. In such an arrangement, banks would need to ensure sufficient liquidity by making contributions to the joint account that are adequate to cover obligations recorded in the operator's ledger. In another example, depending on the design of a 24x7x365 RTGS settlement service provided by the Reserve Banks, participating banks may have individual accounts at the Reserve Banks, separate from their master accounts, that are dedicated to the interbank settlement of faster payments.⁵¹ In this case, banks would need to manage their liquidity on a 24x7x365 basis across their master accounts and their dedicated faster payment settlement accounts at the Reserve Banks.⁵²

In either of these examples, liquidity management by banks requires methods to transfer liquidity between accounts at the Reserve Banks. Because RTGS arrangements for faster payments require liquidity management outside standard business hours, these methods for liquidity transfers may need to be available during nonstandard business hours.

At present, the Reserve Banks do not offer a service that would allow banks to move liquidity as needed to support 24x7x365 real-time settlement of faster payments. Various Reserve Bank services enable transfer of funds between accounts at the Reserve Banks, including the Fedwire Funds Service and the National Settlement Service; however, none of them fulfill the around-the-clock requirement. Over time, the Reserve Banks have extended

⁵¹ Globally, a number of central banks that provide or are planning to provide RTGS services for faster payments, including the ECB and the Reserve Bank of Australia, require banks to have separate, dedicated accounts for the settlement of faster payments through those services.

⁵² If faster payments settle through banks' master accounts at the Reserve Banks, then liquidity management would involve a bank's overall liquidity available for settlement, as opposed to its allocation of liquidity specifically available for settlement of faster payments.

operating hours for these services.⁵³ However, current operating hours limit liquidity management based on these services, particularly during weekends and holidays.

2. Characteristics of a Liquidity Management Tool

As a result of the potential need for liquidity management outside standard business hours in certain RTGS-based systems for faster payments, and the limitations of existing Federal Reserve services to support such liquidity management, the Board is requesting comment on whether the Reserve Banks should consider providing a liquidity management tool that would enable movement of funds during nonstandard business hours between banks' master accounts at the Reserve Banks and an account (or accounts) at the Reserve Banks used to conduct or support 24x7x365 real-time settlement of faster payments.⁵⁴ To provide such a tool for liquidity transfers during nonstandard business hours, the Federal Reserve could enhance an existing service by extending that service's operating hours, potentially up to 24x7x365, or providing special operating windows outside current operating hours. Alternatively, the Reserve Banks could develop a new service. Regardless of whether the Reserve Banks enhance an existing service or develop a new service, the Board envisions such a service being used, at least initially, only for the purpose of liquidity management related to RTGS-based faster payment services. The Board recognizes, however, that depending on its design, a liquidity management tool could have

⁵³ The Fedwire Funds Service operating hours for each business day begin at 9:00 p.m. eastern time (ET) on the preceding calendar day and end at 6:30 p.m. ET, Monday through Friday, excluding designated holidays. For example, processing on a Monday begins at 9:00 p.m. ET on Sunday night and ends at 6:30 p.m. ET Monday night. The Reserve Banks last expanded the Fedwire Funds Service operating hours in 2004, moving from an eighteen-hour business day to the current twenty-one and one-half hour business day. Current operating hours for NSS are 7:30 a.m. to 5:30 p.m. ET, Monday through Friday, excluding designated holidays. The Reserve Banks announced in 2015, that they are prepared to accept requests from current settlement agents to open the NSS settlement window as early as 9:00 p.m. ET the previous calendar day for the next business day. To date, no settlement agent has requested an earlier opening.

⁵⁴ As a baseline, it is assumed that liquidity transfers to or from settlement accounts are routinely available during existing operating hours for the Fedwire Funds Service.

functionality that would be useful for other purposes. In particular, the ability to move funds outside standard business hours could be used to manage cash collateral in a DNS arrangement for faster payments that uses full cash collateral at the Reserve Banks to mitigate credit risk associated with deferred settlement.

To determine how the Reserve Banks could best provide a liquidity management tool that meets industry needs, the Board is further seeking input on the characteristics and capabilities that such a tool might have. A key area of interest to the Board is the level of involvement that individual banks would wish to have in establishing the timing of liquidity transfers and in initiating specific transfers. For example, a tool could allow a designated agent to coordinate liquidity transfers simultaneously across a large number of participants in a settlement arrangement, thereby removing the need for those participants to continuously monitor liquidity and initiate corresponding liquidity transfers. Such a tool could also support automated liquidity transfers, particularly during nonstandard business hours, based on thresholds established by a bank working with a designated agent. Such capabilities could be possible through NSS (or a similarly designed service) for the multilateral movement of funds between accounts at the Reserve Banks. Alternatively, if banks prefer to have more direct involvement in the timing and tailoring of their liquidity transfers, a tool could involve individual liquidity transfers initiated by individual banks. Such a structure for liquidity management could be provided through the Fedwire Funds Service (or a similarly designed service). In either case, expanded operating hours for such a service would support liquidity management outside standard business hours, possibly up to 24x7x365.

3. Public Benefits of a Liquidity Management Tool

The Board believes a liquidity management tool could improve the level of participation by banks in real-time settlement infrastructure for faster payments. Such a tool could be an efficient and economical way to close potential gaps in account funding times for existing and potential future private-sector 24x7x365 real-time interbank settlement systems. Thus, the tool might make private-sector systems more attractive to a broader range of banks and boost the prospect of more banks joining private-sector systems. It could similarly increase participation in a 24x7x365 RTGS settlement service provided by the Reserve Banks. The end result might be a combination of RTGS arrangements for faster payments, enabling broader access to real-time interbank settlement infrastructure in the long term with similar safety, resiliency, and efficiency benefits discussed in relation to a Reserve Bank-provided RTGS settlement service. In addition, the liquidity management functionality itself would mitigate liquidity risk that can arise for banks in 24x7x365 real-time settlement of faster payments and the concomitant possibility that end users will experience individually rejected payments and broader scale payment interruptions.

V. Request for Comment

The Board is seeking feedback on all aspects of the discussion presented in this notice and the specific questions posed below. The Board will use this feedback to assess what steps, if any, it should take related to the actions discussed or alternative approaches offered by the payment industry or other stakeholders. As previously mentioned, these actions are subject to the longstanding principles and criteria on new services or major service enhancements as part of the Federal Reserve's statutory requirements. As part of assessing these actions, the Board would continue its due diligence related to those requirements.

The Board intends to publish the results of this request for comment and, as appropriate, to seek further comment on any specific actions that the Board determines that the Federal Reserve might pursue. The Board recognizes that a decision to undertake these actions, in particular the development of a 24x7x365 RTGS settlement service, will require close partnership and collaboration with industry stakeholders. The Federal Reserve would work with stakeholders to implement new infrastructure within a sensible timeline that provides stakeholders enough advance information to calibrate resource planning and operational readiness. The Board also seeks feedback on specific areas, such as liquidity management, interoperability, accounting processes, or payment routing, that stakeholders believe may require joint Federal Reserve and industry teams to identify approaches for implementation in a 24x7x365 RTGS settlement service.

Questions

1. Is RTGS the appropriate strategic foundation for interbank settlement of faster payments?
Why or why not?
2. Should the Reserve Banks develop a 24x7x365 RTGS settlement service? Why or why not?
3. If the Reserve Banks develop a 24x7x365 RTGS settlement service,
 - a. Will there be sufficient demand for faster payments in the United States in the next ten years to support the development of a 24x7x365 RTGS settlement service? What will be the sources of demand? What types of transactions are most likely to generate demand for faster payments?
 - b. What adjustments would the financial services industry and its customers be required to make to operate in a 24x7x365 settlement environment? Are these adjustments incremental or substantial? What would be the time frame required to make these

- adjustments? Are the costs of adjustment and potential disruption outweighed by the benefits of creating a 24x7x365 RTGS settlement service? Why or why not?
- c. What is the ideal timeline for implementing a 24x7x365 RTGS settlement service? Would any potential timeline be too late from an industry adoption perspective? Would Federal Reserve action in faster payment settlement hasten or inhibit financial services industry adoption of faster payment services? Please explain.
- d. What adjustments (for example, accounting, operations, and agreements) would banks and bank customers be required to make under a seven-day accounting regime where Reserve Banks record and report end-of-day balances for each calendar day during which payment activity occurs, including weekends and holidays? What time frame would be required to these changes? Would banks want the option to defer receipt of such information for nonbusiness days to the next business day? If necessary changes by banks represent a significant constraint to timely adoption of seven-day accounting for a 24x7x365 RTGS settlement service, are there alternative accounting or operational solutions that banks could implement?
- e. What incremental operational burden would banks face if a 24x7x365 RTGS settlement service were designed using accounts separate from banks' master accounts? How would the treatment of balances in separate accounts (for example, ability to earn interest and satisfy reserve balance requirements) affect demand for faster payment settlement?
- f. Regarding auxiliary services or other service options,
- i. Is a proxy database or directory that allows faster payment services to route end-user payments using the recipient's alias, such as e-mail address or

phone number, rather than their bank routing and account information, needed for a 24x7x365 RTGS settlement service? How should such a database be provided to best facilitate nationwide adoption? Who should provide this service?

- ii. Are fraud prevention services that provide tools to detect fraudulent transfers needed for a 24x7x365 RTGS settlement service? How should such tools be provided? Who should provide them?
- iii. How important are these auxiliary services for adoption of faster payment settlement services by the financial services industry? How important are other service options such as transaction limits for risk management and offsetting mechanisms to conserve liquidity? Are there other auxiliary services or service options that are needed for the settlement service to be adopted?

- g. How critical is interoperability between RTGS services for faster payments to achieving ubiquity?
- h. Could a 24x7x365 RTGS settlement service be used for purposes other than interbank settlement of retail faster payments? If so, for what other purposes could the service be used? Should its use be restricted and, if so, how?
- i. Are there specific areas, such as liquidity management, interoperability, accounting processes, or payment routing, for which stakeholders believe the Board should establish joint Federal Reserve and industry teams to identify approaches for implementation of a 24x7x365 RTGS settlement service?

4. Should the Federal Reserve develop a liquidity management tool that would enable transfers between Federal Reserve accounts on a 24x7x365 basis to support services for real-time interbank settlement of faster payments, whether those services are provided by the private sector or the Reserve Banks? Why or why not?
5. If the Reserve Banks develop a liquidity management tool,
 - a. What type of tool would be preferable and why?
 - i. A tool that requires a bank to originate a transfer from one account to another
 - ii. A tool that allows an agent to originate a transfer on behalf of one or more banks
 - iii. A tool that allows an automatic transfer of balances (or “sweep”) based on pre-established thresholds and limits
 - iv. A combination of the above
 - v. An alternative approach
 - b. Would a liquidity management tool need to be available 24x7x365, or alternatively, during certain defined hours on weekends and holidays? During what hours should a liquidity management tool be available?
 - c. Could a liquidity management tool be used for purposes other than to support real-time settlement of retail faster payments? If so, for what other purposes could the tool be used? Should its use be restricted and, if so, how?
6. Should a 24x7x365 RTGS settlement service and liquidity management tool be developed in tandem or should the Federal Reserve pursue only one, or neither, of these initiatives? Why?
7. If the Federal Reserve pursues one or both of these actions, do they help achieve ubiquitous, nationwide access to safe and efficient faster payments in the long run? If so, which of the potential actions, or both, and in what ways?

8. What other approaches, not explicitly considered in this notice, might help achieve the broader goals of ubiquitous, nationwide access to faster payments in the United States?
9. Beyond the provision of payment and settlement services, are there other actions, under its existing authority, the Federal Reserve should consider that might help its broader goals with respect to the U.S. payment system?

By order of the Board of Governors of the Federal Reserve System, September 28, 2018.

Ann Misback (signed)

Ann Misback,
Secretary of the Board.