

# Facilitating Consumer Payment Innovation through Changes in Clearing and Settlement

---

Bruce J. Summers

The purpose of this paper is to stimulate thinking and action leading to innovation in clearing and settlement of consumer payments in the digital economy, where the public has come to expect immediate completion in all manner of information-intensive transactions. In keeping with the international theme of the Federal Reserve Bank of Kansas City's 2012 payments policy conference, the paper draws on the experiences of countries whose payment systems support immediate completion of consumer payments, and considers the policies and policy processes that are friendly to such innovation. In particular, the paper addresses concerns that the U.S. payment system is not keeping up with the rest of the digital economy in providing new methods of payment that give consumers immediate access to and use of their deposits held in accounts with banks and other deposit-taking institutions ("banks" for short).

The financial system and broader economy depend on payment system innovation for their smooth functioning, including and especially innovation in the way payments are cleared and settled. Innovative development of clearing and settlement infrastructure requires cooperation among private and public stakeholders in the payment system, and competition among payment service providers using that infrastructure. Public policy should help establish the boundary between cooperation that develops and implements far-sighted strategy for shared clearing and settlement methods and infrastructure, and competition in the delivery of payment services to consumers. While competition appears vigorous, cooperation resulting in far-sighted development of clearing and settlement infrastructure is not. Rather, infrastructure investment is concentrated on fine tuning clearing and settlement infrastructure that supports existing methods of payment, not on meeting present and future needs of the digital economy.

In the following sections, the first posits assumptions that are fundamental to a discussion of clearing and settlement of consumer payments in the digital economy. The next presents a framework for analyzing issues related to the design

and operation of clearing and settlement infrastructure, and to its use by suppliers of payment services, including policy development and governance issues. This is followed by a discussion of public policy considerations that should motivate and guide the development of clearing and settlement processes and supporting infrastructure in a digital economy. The fourth section then presents a reference model for clearing and settling consumer payments in a digital transactions environment. The fifth section addresses governance problems that explain the U.S. payment system's failure to keep up with the needs of the digital economy. Finally, the concluding section recommends actions that the U.S. Congress, Federal Reserve Board, Federal Reserve Banks, and other payment system stakeholders need to take if the U.S. payment system is to keep up with the changing needs of the digital economy.

## **FUNDAMENTAL ASSUMPTIONS**

It is important to begin with some shared assumptions about the needs of consumers using the payment system in the digital economy. Explicit assumptions will help ground debate about public policy and operational design in the reality of consumer needs. Three assumptions that are fundamental to the public policy themes underlying the paper are posited below. While some of these assumptions might be challenged, each is plausibly based in observed changes in consumer behaviors and the use of digital information services in different countries around the world.

### Consumers include individuals, businesses, and governments

The subject of this conference, consumer payments in the “connected age,” focuses on increasingly immediate connections between consumers who are economic actors and involved in monetary exchange. These consumers include individuals, businesses, and local, state, and federal government entities whose increased connectedness is enabled by social networks (for example, Facebook), business networks (for example, LinkedIn), and a variety of other broadly accessible and “always on” communications channels. This paper takes a broad view of consumers and of their economic connections. Consumers may form various combinations of connections to make and receive payments for a variety of purposes in markets for goods, services, and information. The relevant payment combinations for these connected consumers include all payments with an individual, business, or governmental entity on one or both sides as sender and receiver, such as person-to-person (P2P), person-to-business (P2B), and person-to-government (P2G) payments.

### Consumers value immediate completion of digital transactions

Consumer expectations regarding access to and the usability of their information assets have changed markedly in recent years, as they have become more

connected. Today, almost all types of personal, business, and financial records, including assets held in the form of bank deposits, are stored in digital form and are accessed through digital communications systems. Information-intensive businesses models provide, and consumers have come to value and expect, immediate completion of transactions at the time they are made, including many types of financial transactions.

A completed payment is one that is final—that is, irrevocable by the sender and available for unconditional use by the receiver. Methods of payment that provide immediacy and finality have historically been thought of as highly specialized and useful only for large-value payments. The attractiveness of immediate and final payments to consumers for general-purpose use, however, has been recognized for at least a decade (Kuttner and McAndrews 2001). Shifting consumer preferences in the United States for direct access to bank deposits and completion of payments immediately at the time they are made is evidenced in a variety of research, including findings from focus groups assembled by a committee of the Board of Governors of the Federal Reserve System (Board of Governors of the Federal Reserve System 2002a and 2006a). More recent research shows that the banking systems in a number of countries now provide consumers with a method of payment that is immediate and final, known as Immediate Funds Transfer or IFT (Summers and Wells 2011). There is evidence of strong adoption of Immediate Funds Transfer where it has been introduced.<sup>1</sup>

### Consumers value a versatile and universal method for making payments

As was mentioned earlier, consumer payments involve all combinations of payments with an individual, business, or government entity on one or both sides as sender and receiver. These payments reflect transactions for goods, services, and information and account for the lion's share of payment transactions.

U.S. consumers value, and have come to rely on, a method for making and receiving payments that is versatile, that is, the method can be used to pay for any type of transaction between any combination of consumers. Consumers also value, and have come to rely on, a method of payment that is universal, that is, the method connects them through their bank accounts no matter where or how frequently they interact. This method is checks, which is relied on by U.S. consumers because it is versatile and connects the accounts they hold in banks. There is a national clearing and settlement infrastructure for checks connecting all banks, and all banks have historically offered checks to their customers as a method of making and receiving payments. Indeed, current or demand accounts in banks are typically referred to as checking accounts. Checks, however, are rapidly declining in use (Gerdes 2008). The use of checks is declining as consumers adopt more specialized, but usually less versatile methods of payment whose connections to bank accounts and other consumers are limited.

The value of a versatile and universal method of payment such as checks is likely to increase in the digital economy, where consumers make connections in various combinations and in borderless markets for information, goods, services and financial investments. While some immediate and final payment services are being introduced in the United States, their clearing and settlement is limited to proprietary and closed networks that do not connect all consumer bank accounts. Rather, the reach of these services is limited to smaller groups of consumers who hold accounts with a small number of banks participating in a proprietary system or to a given bank's customer base (so-called "on-us" payments). Nonbank providers also offer immediate and final payment services that are substitutes for bank payment services, but again it is over closed networks (analogous to bank "on-us" payments). This pattern of innovation results in new service options including immediate completion of payments, but it fragments the universal clearing and settlement network. A strategic challenge is to combine immediacy and finality of payment with the versatility and universality of the check.

### **FRAMEWORK FOR ANALYZING PAYMENT AND SETTLEMENT ISSUES**

A four-part framework is useful in analyzing payment system issues, including and especially issues pertaining to end-to-end clearing and settlement of consumer payments. Consumer end-users of payment services are the starting and finishing points of the end-to-end clearing and settlement process. This framework will help determine why and where cooperation and competition are important to payment system development, and the appropriate scope of oversight and regulation. The four major components of the framework include the *payment system*, *payment schemes*, *payment infrastructure*, and *payment services*.

The *payment system* is the network of endpoints represented by deposit accounts in banks. Payment is completed by transferring claims on banks recorded in deposit accounts. As such, payment is a function of money and banking in a nation's financial system. Transferable deposits are known as bank money, and payment and bank money are "...closely linked by law, regulation, and tradition." (Mitchell 1974). The nation's noncash money supply is stored in deposit accounts and bank money's usefulness as a medium of exchange depends on the transferability of deposit money between accounts. Deposits and bank money are, as we know, digital information records in accounts, and payments are bank money in transit, or digital instructions for the transfer of deposit balances. Banks become part of the payment system by agreeing to clear and settle a particular method of payment through customer accounts. As is the case with other information networks, participation in the payment system will always ideally include the universe of banks.

*Payment schemes* specify payment instruments by which the public gains access to the payment system, that is, the methods by which payments are made and received using deposit accounts in banks. Payment schemes establish the rules and standards that precisely define the operational processes and behaviors which, when followed, allow the public to access the payment system using any given

payment instrument. Laws and regulations also help define schemes, for example, by allocating liability for errors or fraud losses associated with electronic methods of payment. Types of instruments defined by schemes include checks, credit cards, debit cards, online banking applications, etc., and now in some countries Immediate Funds Transfer, each of which requires those involved in its use to follow a set of rules and standards. Schemes may and often do limit the versatility of a payment instrument, for example, payment cards are designed principally for P2B and P2G transactions. As mentioned earlier, use of the check is not limited to a particular combination of consumers or type of transaction, but rather is designed as a versatile instrument that consumers can use to make payment for virtually any purpose. A scheme's rules and standard specify how a particular instrument is cleared and settled and in particular whether the payment is a credit transfer or a debit transfer.<sup>2</sup>

*Payment infrastructure* supports clearing and settlement of payment instruments across the payment system. Clearing is the exchange of instructions for transferring claims on banks. Settlement is the actual transfer of value ordered in the instructions, which is accomplished by debiting and crediting the deposit accounts of the sender and receiver of a payment, respectively. Clearing and settlement are arcane processes which are the province of operations specialists. Perhaps for this reason, the attention that is given to clearing and settlement is often narrowly focused on the interbank part of the process with less attention given to the end-to-end process that includes the bank-to-customer. An end-to-end view of clearing and settlement infrastructure is especially important for methods that provide immediate completion of payments, as consumers rely on the transfer of deposit balances and immediate notification that their transfers are completed. The clearing and settlement infrastructure should always be viewed as supporting a universal network connecting all deposit accounts held in banks and as an end-to-end process that includes immediate notification to both the sender and receiver that the payment transaction is complete.

*Payment services* are the specific means by which banks provide their customers with access to their deposit accounts for payment purposes, using instruments specified by various schemes. Banks extend payment services to their customers through back office links to clearing and settlement infrastructures that support schemes. The range of payment instruments that a bank offers and which consumers can use to make payments from and receive payments into their deposit accounts depends on the number of schemes in which a bank participates. The quality and price of service experienced by consumers are determined by the attributes of the scheme, the effectiveness and efficiency of the interbank clearing and settlement infrastructure, and the bank's terms for extending access to the payment system to its customers. For example, it was noted earlier that checks universally connect consumer deposit accounts across the banking system, and that checks can be used to pay for any type of transaction involving any combination of consumer. The physical form of a check, its information content, and certainty that it will be cleared and settled by all banks are features that are well understood by consumers.

Banks compete for the consumer's business in part by distinguishing their check services on the basis of convenience (e.g., completeness and timeliness of check statements, acceptance of customer-generated check images, etc.), credit features (e.g., overdraft protection for check writers), and the prices they charge for writing checks and accepting checks for deposit.

This four-part framework helps define the primary roles played by those responsible for making the payment system work and for innovating to meet consumer needs. The roles include planning for the evolution of the payment system, management of payment schemes, “nuts and bolts” operation of the clearing and settlement infrastructure, and of course the provision of payment services to the public. The first two roles—planning the evolution of the payment system and scheme management—involve stewardship for common interests and shared resources, which, in the final analysis, will be judged successful if they meet public needs. Planning addresses big-picture issues, such as the type and number of schemes that the payment system should support. Major issues today include the speed with which payments are cleared and settled, and development of a versatile and universal method of payment to replace checks. Another planning issue concerns the requirements and regulations that apply to nonbank participants in the payment system, who are the main digital payment innovators. As common interests, the payment system and its schemes require a high degree of cooperation among stakeholders to be successful. In addition, because they determine the usefulness of bank money as a medium of exchange and constitute a network that serves the public interest, the payment system and schemes require some oversight by a public body like a central bank (Summers 2012).

The U.S. payment system does not currently support immediate completion of payments, and there are no plans for doing so despite long-standing evidence of the need for such a capability and development of these capabilities elsewhere around the globe. While there is innovation in immediate payments, it is limited to small closed systems operated by nonbanks, or to small closed systems operated by individual banks or consortia of a handful of banks. Developing a national capability for immediate completion of payments will require far-sighted and inclusive stewardship over the payment system. Stewardship must be national and involve all major stakeholders. Note that fragmented development of new immediate payment capabilities is occurring at the same time that checks are declining in importance as a means of payment. Fragmented development of a new method of payment supporting immediate completion of funds transfers represents a missed opportunity for creating a viable substitute for the check as the check declines. A later section of this paper assesses the prospects for immediate completion of consumer payments in the United States.

## **PUBLIC POLICY CONSIDERATIONS**

This section discusses public policy considerations that should motivate payment system development in a digital economy and be used to evaluate its

performance, especially clearing and settlement. The discussion begins with an overview of central bank policy principles for payment systems and how these principles are applied to consumer payments. Four paramount principles are then described that will help guide the design of a reference model for clearing and settling consumer payments in a digital economy.

### Payment system policy has an international basis

The international community of central banks has promulgated a number of public policies pertaining to the payment system through the Committee on Payment and Settlement Systems (CPSS), which meets at the Bank for International Settlements (BIS).<sup>3</sup> These policies include standards of conduct and other related payment system guidance. The international standards of conduct are primarily intended for systemically important payment systems, that is, payment systems that have the potential to transmit disruptions to the financial markets and even to the broader economy (BIS 2011a). Some of these international standards, however, are relevant to the design and operation of consumer payment systems.

The international standards are meant to foster financial stability, and their main goals are safety and efficiency. The standards are elaborated in an official set of performance expectations for payment systems and institutions whose weakness or failure would pose risks to the financial system as a whole. These systemically important institutions are referred to by the BIS as Financial Market Infrastructures (FMIs); they include large-value payment schemes (such as Fedwire and CHIPS in the United States) as well as central securities depositories, securities settlement systems, central counterparties, and trade repositories.

Some countries have begun to apply the BIS standards, at least in part, to retail and other payment systems serving consumers that are considered important to the smooth functioning of the economy. For example, the Eurosystem (the European Central Bank and the National Central Banks together) has adopted a classification scheme for retail payment systems based on these systems' importance to the economy, and has designated a new classification, "prominently important" (European Central Bank 2003). In the United States, the Board of Governors of the Federal Reserve System (hereafter the Federal Reserve Board) applies the BIS standards to systems and institutions that it considers to be systemically important, primarily institutions that serve the financial markets, but not to consumer payment systems.

### Consumer payment systems require policy attention

Payment systems serving consumers are a crucial part of the infrastructure of a modern economy and, as such, require direct public policy attention. Public policy for consumer payments should consider central bank concerns about the stability of the financial system and the broader economy, and the needs of consumers in the digital economy.<sup>4</sup> Four policy considerations appear paramount in motivating responsive development of payment systems serving consumers: financial stability,

operational reliability and security, effectiveness, and efficiency (Summers 2012). Each consideration is elaborated below in terms of its practical implications for the design of clearing and settlement infrastructure that supports immediate completion of consumer payments. This discussion of public policy considerations is not necessarily intended to be definitive; rather, it is intended to suggest a way of thinking about payment system design with the needs of consumers in a highly connected digital economy at the forefront of thinking.

Financial stability depends on the predictability of final consumer payments

A payment system is financially stable if it is likely to engender public confidence and continue functioning normally when subjected to severe stresses, including credit and liquidity crises faced by its participants. Financial stability for consumer payments is a function of the safety of deposits consumers hold in transactions accounts in banks (money as a store of value) and the predictability that funds transfers between their accounts will be completed as instructed (money as a medium of exchange). Consumer confidence in being able to continue to access deposit accounts in banks to make and receive payments is in part a function of the federal safety net that guarantees bank deposits. Consumer confidence that funds transfers made and received are completed predictably is a function of speed, finality, and timely notification. Finality is determined by the terms under which banks provide account and payment services to consumers. By participating in a payment scheme that supports immediate and final clearing and settlement, banks will provide a service that buttresses consumer confidence in the payment system.

The willingness of receiving banks to extend finality to their customers depends in part on their ability to manage credit and liquidity risks faced from sending banks. The stability of interbank settlement can be readily managed using tried and tested clearinghouse risk management practices, including and especially those used with multilateral netting. Because the financial stability of payment systems that clear and settle consumer payments is an important public policy consideration, it is incumbent on public authorities to lay out the minimum financial stability standards that these payment schemes and their clearing and settlement arrangements should meet.

Operational reliability and security is an end-to-end consumer experience

An operationally reliable and secure payment system is one that delivers uninterrupted service to its customers according to contracted terms, and that protects their information assets. End users will gauge the reliability and security of a digital payment system based on their personal experience with it and by comparing it to what they have come to expect through using other digital services. Consumer experience in the digital economy therefore results in de facto performance



standards for digital payments. For example, consumers in the digital economy expect continuous and uninterrupted connectivity and access to their information assets. Further, consumers expect strong protection of their information assets and transactional identities.

In a digital transaction, operational performance and security must be managed and measured end-to-end, from the sender to the receiver of the digital payment. The operational process incorporates the sending and receiving banks and the clearing and settlement infrastructure. The payment scheme's design, and its rules and standards, must, therefore, result in a continuous governance of the end-to-end process between the payment sender and receiver, regardless of the number of operational handoffs. To meet consumer expectations for uninterrupted service, every step in the process, including the communication channels linking the sender and receiver to their respective banks, must contribute its part to meeting the end-to-end performance expectations.

The bar for digital payment security is set very high: expectations are that valuable consumer information will be well protected throughout the payment process. This expectation cannot be overemphasized. From a consumer standpoint, and assuming a payment process based on credit transfer, there are two scenarios around which security should be built. First, senders of digital payments need to be protected against the threat of an unauthorized party gaining access to their account and transferring funds from it. This threat involves a compromise of the authentication process between a sender and the sender's bank, possibly in the form of account takeover. Second, the sending and receiving banks need to be protected against the threat of unauthorized payment instructions being inserted into the interbank clearing and settlement process. If this threat were realized, the sending and receiving banks could be tricked into acting on bogus payment orders that take time to identify, reconcile, and correct, exposing them to losses if deposits made by final payment are withdrawn.<sup>5</sup>

Effectiveness is influenced by speed, versatility, and universal coverage

The effectiveness of a particular method of payment depends on how well it meets the convenience and needs of individual and business consumers in the digital economy. Among the payment attributes that consumers look for, speed in completing transactions, versatility in the use of a given method of payment, and universal connectivity to accounts held in banks are of special importance in the digital economy.

Speed is an especially important consideration for payments in the digital economy. Consumers expect virtually immediate completion of their digital transactions. The idea that money in transit is digital information which can be processed immediately has not been readily accepted by the banking industry. Most

bank-sponsored payment schemes depend on clearing and settlement systems that are designed around batch processing and delayed settlement, and these clearing and settlement arrangements are being nurtured as opposed to being re-designed around continuous, real-time processing.

The time needed to complete the end-to-end sequence of steps involving communication of payment instructions, verification, risk management, and accounting and settlement can be greatly compressed for digital credit transfers. The time compression enabled by digital technology and processes is such that clearing and settlement can and should be thought of as one continuous process. Properly designed and executed, clearing and settlement of digital payments will benefit all parties to the transaction, including not only end users, but banks as well. For banks, digital payments present an opportunity to better manage their credit risks by integrating real-time monitoring of customer balances with internal risk management processes.

As mentioned earlier, a versatile method of payment can be used for a wide variety of transactions between any combination of consumers (P2P, P2B, P2G, B2B, etc.). There are trade-offs between versatility and specialization, however, and not every method of payment needs to be or should be developed around meeting every conceivable need. For example, a file transfer method of payment that caters to recurring bulk transactions, such as corporate payrolls, provides specialized benefits that make it very valuable to a particular type of use and user. Also, prepaid cards may be especially well adapted for very small purchases whose only practical alternative method of payment is cash. But, there should be at least one method of payment available that is versatile enough for consumers to use ad hoc and for transactions that do not fit a particular mold.

Universal connectivity is a baseline requirement of any new digital payment scheme. This requirement is not uniquely associated with digital networks and is, in fact, a distinguishing feature of the check system in the United States (Board of Governors of the Federal Reserve System 2010b). Universal connectivity is an important inherited trait from checks that should be present in a digital payment system. Universal connectivity depends on an interbank clearing and settlement system linking all deposit account holders, and participation by each and every one of the account holding banks as a provider of the method of payment defined by the digital payment scheme.

Efficiency is determined by prices and operational standards

For consumers, payment system efficiency is determined in the first instance by the prices they are charged for services. An additional dimension of efficiency is the extent to which ease of use translates into concrete opportunities to integrate management of financial processes, accounts, and other records that are closely linked to payment.

Prices charged for consumer payment services are a function of their full cost of production and the market power that banks have over their customers. With regard to production cost, banks shoulder a share of the cost of managing the payment scheme and the infrastructure used to clear and settle a particular method of payment. They also bear the cost of internal deposit accounting and payment processing systems, and related back-end systems such as risk management, general ledger accounting, and the like. As deposit-taking and payment institutions, banks are information-intensive businesses and their production costs are therefore largely fixed costs (or should be largely fixed costs, if they are well-managed businesses). Accordingly, banks enjoy economies of scale and scope in their payment businesses that result in lower marginal costs as transaction volume increases. One would expect to see relatively low prices for digital payment instruments following scheme standards that support straight-through processing and being provided in a competitive banking environment, especially once the volume of payments grows. It is essential, however, that the scheme specify standards that extend end-to-end, so that banks are able to continue straight-through-processing to the end user customers.

While many banks provide payment services and there are indications of vigorous competition among banks in the payment services arena, competition among services providers is not perfect. In particular, not all payment schemes establish standards for the bank-to-customer component of clearing and settlement, which leads to inefficiency in the provision of payment services and opportunity to levy extra service charges that mask inefficiency. For example, operational standards for real-time Fedwire and CHIPS payments extend only to banks and not to end-user customers, which is one explanation for the very high prices that banks charge their customers for access to these two payment schemes (Biehl et al 2002). Also by way of example, while banks may compete vigorously for consumer account relationships, they also make it difficult for consumers to switch banks once these relationships have been established. This difficulty is again due to lack of standardization, this time in account numbering conventions and to industry practices that prevent consumers from retaining their account numbers when they change banks (unlike the portability of telephone numbers that benefits consumers in the telecommunications market). Factors such as these may help explain the high prices banks charge for real-time payments today.<sup>6</sup>

Payment schemes' owners and infrastructure operators also have monopoly power that can be used to set prices far above their production cost. There is abundant evidence of clearing and settlement pricing that is based not on production cost but on methods designed to extract very high returns for use of the infrastructure. Perhaps the most prominent example is ad valorem pricing for payment methods that essentially involve giving bank account holders direct access to their deposits and that do not entail bank credit, as in the case of debit cards.<sup>7</sup>

Smooth integration of payment-related information with business records is another important efficiency consideration. The timeliness and potential accuracy of digital payments are maximized when record keeping is synchronized bilaterally between the sender and receiver of payment, allowing both to complete their handling of a transaction in the same timeframe. For individuals, this amounts to maintaining a continuous record of account activity for both incoming and outgoing payments. Businesses further benefit from integration of payment and invoicing records, which allow close coordination of payment processes and invoicing processes.<sup>8</sup>

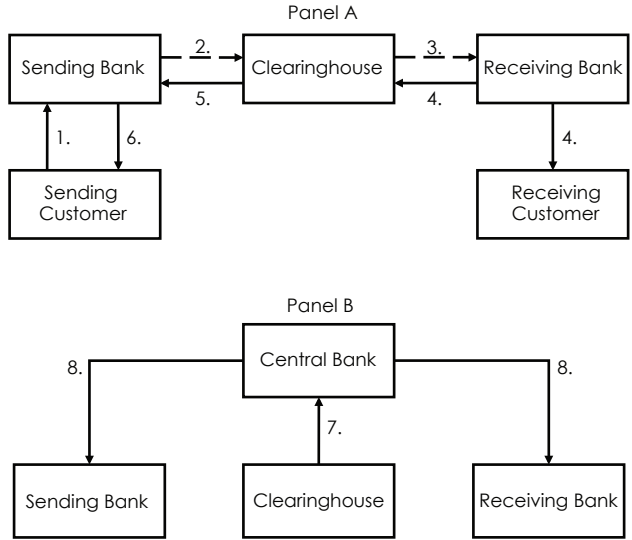
### **CLEARING AND SETTLEMENT REFERENCE MODEL FOR IMMEDIATE FUNDS TRANSFER**

Having posited assumptions about consumer payment needs in the digital economy and reviewed public policy considerations for developing the payment system with the needs of the digital economy in mind, it is now possible to construct a reference model of a payment scheme that meets needs and addresses public policy considerations. The payment scheme should support payments that are immediate, final, and low cost, and that are priced to the consumer at production cost plus a reasonable markup. The scheme should also provide a versatile payment instrument that can substitute for check payments. Ideally, all banks should support the payment scheme by providing the scheme's method of payment as a service. The payment scheme would support a new type of payment instrument—call it Immediate Funds Transfer or IFT, as in “pay by IFT,” akin to saying “pay by check.” The IFT scheme is intended for any combination of consumer payments between individuals, businesses, and governmental entities.

The model described here is conceptually appropriate for immediate and final funds transfers. This model is fully operational and tested in a number of countries around the world (Summers and Wells 2011). In fact, cumulative evidence suggests that IFT is the predominant new type of payment system in development around the world, in both advanced and developing economies.<sup>9</sup> Experience shows that the IFT model is scalable and can support high volumes of transactions while meeting demanding operational quality targets including rapid end-to-end completion times and strong security. Further, experience shows that IFT can be produced at unit costs consistent with prices consumers are willing to pay for such payments. The clearing and settlement process on which the model is based is end-to-end and depends on scheme rules and standards, promulgated by a clearinghouse, that support straight-through processing and that are followed throughout the process by every entity playing an operational role.

The IFT clearing and settlement model is shown in Figure 1. Six parties play roles in clearing and settlement: the sending and receiving bank customers, their banks (assuming an interbank transfer), the clearinghouse, and the central bank. It is important to recognize at the outset that the clearinghouse role can

**Figure 1**  
**Clearing and Settlement Reference Model**  
**Immediate Funds Transfer\***



There are six main steps in the end-to-end clearing and settlement process for customer IFT transactions depicted in Panel A, and two additional main steps in the interbank clearing and settlement process depicted in Panel B. These steps are as follows.

1. Sending customer transmits an IFT payment order to his/her/its bank
2. Once the sending bank accepts the payment order by authenticating its customer, performs a credit check (for sufficiency of funds or credit capacity), and assuming a satisfactory credit check, it then debits its customer's account and transmits the validated payment order to the clearinghouse
3. Once the clearinghouse accepts the payment order by validating the correctness of the clearing instructions (completeness of mandatory fields, correctness of receiving bank address, etc.), performs a credit check (to ensure that the sending bank's interbank net debit position is within limits), and provisionally records the payment order details and resulting interbank net debit and credit effects for the sending and receiving banks, respectively, it then transmits the payment order to the receiving bank
4. Once the receiving bank validates its receiving customer's account information and credits the receiving customer's account, it then notifies both the receiving customer and the clearinghouse that the payment has been credited (N.B. at this point final settlement has occurred for the end-user customers)
5. Once the clearinghouse removes the provisional designation from the record of payment order and interbank net debit and credit positions, it then notifies the sending bank that the payment is complete
6. Sending bank notifies its sending customer that payment is complete
7. Clearinghouse submits interbank settlement statement to the central bank reflecting net debit and credit positions resulting from customer IFT payments completed during the settlement period
8. Once the central bank acts on the settlement statement by making debit and credit entries to reserve accounts and thereby finalizes the interbank settlement of payments accumulating during the settlement period, it then notifies the sending and receiving banks and the clearinghouse

\* This is a stylized IFT clearing and settlement model that is based in part on Faster Payments in the United Kingdom and Real-Time Clearing in South Africa.

be performed either by a privately owned and operated entity, or by the central bank. In the former case, the clearinghouse would provide the interbank clearing functionality and serve as settlement agent on behalf of its participating banks, calculating interbank net settlement positions and presenting settlement statements to the central bank at designated times. In the latter case, the central bank would provide both interbank clearing functionality and settlement: settlement would likely occur payment-by-payment, directly in the banks' reserve accounts, as is the case today for RTGS system payments. This paper is neutral on the question of the private versus public character of the clearinghouse. The IFT clearing and settlement model presented here assumes a private clearinghouse because this approach allows ready distinctions between final settlement of customer transactions using commercial bank money, and final settlement of interbank obligations arising from IFT payments using central bank money.<sup>10</sup>

In Figure 1, clearing and settlement of customer IFT transactions is shown in Panel A, and clearing and settlement of interbank obligations arising from customer IFT transactions is shown in Panel B. Movements of information and funds are illustrated using solid and dashed lines, respectively. The timing, sequence, and legal status of the operational processes shown in Figure 1 are critical to understanding settlement finality for the end users on the one hand, and for their sending and receiving banks on the other hand. Note in particular that the sending and receiving banks provide final settlement to their customers (see Panel A) before they themselves settle their interbank positions arising from the IFT clearing (see Panel B). Panel A depicts the end-to-end process whereby the sending customer of one bank originates an immediate funds transfer to the receiving customer of another bank, for which both customers receive final settlement in commercial bank money and immediate notification that the funds transfer has been completed. Panel B depicts the interbank settlement process for all IFT payments made by bank customers within a designated timeframe using central bank money.<sup>11</sup>

The processes illustrated in Panel A that result in finality of payment for the sender and receiver are operationally and legally binding on the sending and receiving banks. These processes will be detailed in the clearinghouse rules. The end-to-end process is continuous and immediate, and each party will be bound by operational performance requirements pertaining to each step, as is commonly the case for all joint undertakings of this nature. The entire end-to-end process, beginning with initiation of the payment order by the sender and concluding with the notification to the sender that payment is complete, will take no longer than one minute and probably be completed in seconds. While the speed of IFT clearing and settlement is demanding in comparison to traditional clearing and settlement timeframes, experience shows that the common time unit of measure for completing IFT transactions is seconds. Banks are required by agreement to provide final settlement to their customers within the time it takes for the round trip to be completed. The point at which an IFT payment becomes final is when the receiving bank credits the receiving customer account.

The processes illustrated in Panel B result in final settlement among the sending and receiving banks (while the stylized model includes only two banks, many banks would participate and all would be party to the interbank multilateral settlement). It is reasonable to think that banks will want to settle their obligations arising from IFT clearing in a distinct process that mirrors their settlement practices for other real-time payments. Interbank settlement of IFT payments can, and probably will, occur several times during the operational day.<sup>12</sup> Banks have the option of shortening the interbank settlement period as IFT schemes grow in terms of value processed, to the point of converging on immediate settlement of their IFT obligations. Further, oversight authorities will undoubtedly take an interest in the development of IFT, including the risk management implications of interbank settlement practices.

End-to-end clearing and settlement illustrated in Figure 1 can only be completed in the IFT timeframe with virtually instantaneous communication of information in each step of the process. It is not unrealistic to expect that the information flows will be both fast and inexpensive. It is worth noting, however, that communication processes between banks and their customers, and banks and the clearinghouse, need to be seamlessly coordinated. This is readily accomplished for the interbank communications which will take place over a shared communications facility that is coordinated by the clearinghouse. It is possible (but not necessary) that the sending and receiving banks share communications facilities for reaching their respective customers. Banks are likely to compete in the market for IFT services partly on the basis of the channels for access to deposit accounts that they provide to their customers.<sup>13</sup>

Is the IFT clearing and settlement process illustrated here likely to deliver services at a cost that is ultimately attractive to consumers? Based on experience with implementation of the model by banks in a number of countries, and by nonbank payment services providers in the United States, the answer is yes. Bank implementations of IFT schemes are almost always priced to customers on a per transaction basis, or through fixed fees charged for a package of account-related services. Using the per transaction fee as a basis for judging the order of magnitude cost and price that would be expected to result from the introduction of a *de novo* IFT clearing and settlement system based on what is observed in countries where IFT has been introduced, one would expect the price to consumers to range from 50 cents to \$2.50 (Summers and Wells 2011). Prices in this range would be expected to fully cover operational expense, associated risk management costs, normal overhead allocations, and profits.

## **PAYMENT SYSTEM GOVERNANCE AND INNOVATION**

The foregoing discussion shows that the U.S. payment system has yet to accommodate the shift in consumer behavior in the digital economy. It has also been shown that the United States is lagging in the development of consumer payment methods that are increasingly expected in the digital economy. The needed payment system response is illustrated with an IFT reference model that supports

payment connections for all combinations of consumers across all account holding institutions; IFT is up and running and is commercially successful in a number of countries. There are no evident prospects for lifting the present payment system in the United States into a new, IFT-like payment scheme.

Market acceptance, technology, and cost do not appear to be barriers to rapid adaptation of the U.S. payment system to the digital economy. The principal barriers involve coordination in planning and developing clearing and settlement infrastructure and related end-to-end payment schemes that threaten existing business models. The IFT model shows that the new clearing and settlement infrastructure requires seamless and impeccable end-to-end coordination in a real-time operational setting. This type of operational coordination is new to banking, long-standing experience with RTGS notwithstanding.

Further, public policy considerations call for explicit pricing of IFT payments based on production cost. This approach is consistent with utility pricing, and it challenges the current practice of ad valorem pricing of some payment methods used by consumers to access deposits (e.g., debit cards). Cost-based pricing would likely result in IFT transaction fees that are much lower (perhaps up to 20 times lower) than similar fees typically charged on bank wire transfers. Obviously, IFT would pose significant challenges to current wire transfer business models, especially because most wire transfers are made by banks on behalf of their customers and are relatively small (Biehl et al 2002). As well, IFT would challenge the business models of consumer payment networks that charge ad valorem prices for directly accessing deposit accounts.

Payment system development that is responsive to the needs of the digital economy and public policy considerations, along the lines of the IFT, will require clear-minded and far-sighted planning, cooperation in the development of payment schemes and clearing and settlement infrastructure, and vigorous competition among providers of IFT services. Is existing payment system governance in the United States capable of developing a broadly supported strategy responsive to the needs of the digital economy and fostering the degree of cooperation needed to devise and implement a new IFT payment scheme? That is the big question.

Governance lies at the heart of payment system development

Governance is about decisionmaking and the allocation of rights among stakeholders with shared interests. Effective governance allocates rights and allows stakeholders to influence decisions in ways that are, and that are perceived to be, fair, sensitive to the needs of each stakeholder group, and in line with the public interest. There is no single governance model for the payment system that is suitable across countries. However, the experiences of countries that have dramatically uplifted their payment systems with IFT offer some interesting case studies and lessons.

National government is the prime mover and enabler in establishing formal governance of the payment system in a number of other countries, including



Australia, Canada, the eurozone, and the U.K. National legislatures or government executive bodies such as the Treasury are moved to address contention among payment system stakeholders, acute consumer protection concerns, the inability of the payment system to innovate and adapt to changing consumer needs, or lack of competition. Commonly, governments act by forming a national commission to study and make recommendations to improve the national payment system, reporting to the legislature or the executive branch.

The recent experience of the U.K. is instructive, as the government's action was prompted by concern about lack of competition in the banking system, resulting in part in a failure to innovate by speeding up clearing and settlement of payments (Smeets 2012). The U.K. is one of the countries where IFT has been successfully introduced. The report of a national commission ultimately led to the establishment of the U.K. Payments Council (Cruikshank 2000). The decision to formalize payment system governance arrangements in the U.K. was predicated on the idea that the payment system is part of the critical infrastructure supporting the economy and as such requires strategic planning. In addition, the decision was based on a perception that payment system practitioners, that is, scheme owners and operators, and users, were not communicating or cooperating well. Concerns about competition were reflected in the perception that there was insufficient innovation in the payment system, and in particular failure to speed up clearing and settlement times, despite increased use of electronic means of payment. New governance arrangements were envisioned that would result in commitment to innovation.

The U.K. Payments Council was established in 2007 with the mandate to develop a strategic plan and designate payment schemes. The Council's board includes independent directors who are expected to represent the public interest across user groups, not specialized interests such as corporations or individuals. The Council's business is conducted in a transparent manner, and it relies on consultative mechanisms to engage all stakeholders with an interest in the payment system. Subsequent to its establishment in 2007, the U.K. Payments Council issued a National Payments Plan in May 2008, which was updated in October 2011, and designated the Faster Payments scheme in May 2008. Faster Payments is the first new payment service in the U.K. in 20 years.

### The U.S. payment system lacks national governance

Foundational to understanding today's payment system governance in the United States is awareness of its historical antecedents, notably the origins of the Federal Reserve System established in the 1913 Federal Reserve Act (Board of Governors of the Federal Reserve System 2005). Congress intended for the new central bank to play an operationally active and dominant role in the payment system of the time, in part by unifying clearing and settlement across the nation. At the time, the check was the predominant noncash means of payment and was used principally in business and banking transactions. The central banking system created by Congress included the Federal Reserve Banks, whose powers included the

provision of payment services, and the Federal Reserve Board, whose powers included supervision of Reserve Bank affairs and regulatory authority over the operational services provided by the Reserve Banks, including payment services.

Practically speaking, the Reserve Banks were designed to function as the national clearinghouse for checks. In today's terminology, the Reserve Banks were empowered to be check system operators, and the Federal Reserve Board and Reserve Banks together were scheme owners, as they issued, respectively, regulations and operating rules (aka standards) governing Reserve Bank check services. This governance prevails to this day and applies to all payment services provided by the Reserve Banks, including not only checks but wire transfer of reserve account balances (Fedwire) and the automated clearinghouse (ACH). The Reserve Banks have historically played a very significant operational role in clearing and settling checks, ACH items, and Fedwire funds and securities transfers. In essence, the Reserve Banks function as bankers' banks, providing interbank clearing and settlement services to commercial banks and other depository institutions, settling interbank payment obligations in reserve accounts.

Of course, much has changed since 1913. Notably, use of checks as a means of payment expanded well beyond banks and business to include individuals (that is, checks became a highly versatile and general-purpose method of payment). Later, changes in technology and banking structure allowed correspondent banks and private clearinghouses to assume a greater role in clearing and settling first checks and then newer payment instruments. The ACH was introduced as an automated clearing and settlement alternative to the check, and a variety of new methods of payment, such as payment cards, came into use. Electronic communications networks for payments, such as ATM networks and card authorization networks, came into being. During this time of innovation the Federal Reserve Board took a strong position prohibiting the Reserve Banks from expanding their clearing and settlement services beyond check and ACH.<sup>14</sup> In addition, nonbank providers, such as PayPal, began offering substitutes for bank payment services, and supervisory authorities allowed these nonbanks to offer such services without becoming chartered as banks.

In the decades following 1913, Congress directed the Federal Reserve Board to improve the effectiveness and efficiency of specific aspects of the clearing and settlement process for checks by granting it new regulatory powers extending to commercial banks. In exercising its new powers, the Federal Reserve Board issued regulations and supported Reserve Bank service enhancements that would assist commercial banks in upgrading their clearing and settlement practices. For example, under the Expedited Funds Availability Act, Congress directed the Federal Reserve Board to speed up availability of funds for checks deposited by consumers in banks (a congressional action prompted by public outcry over banks' practice of placing long holds on check deposits). The Federal Reserve Board did so by issuing regulations that include check availability schedules, which banks are obliged to meet, and by encouraging and supporting Reserve Bank operational enhancements

to speed up interbank clearing and settlement of checks. Similarly, under the Check Clearing for the 21st Century Act (Check 21), the Federal Reserve Board issued regulations that allow banks to further speed up check clearing and settlement by stimulating electronic clearing of checks. Again, the Board looked to the Reserve Banks to support the intent of Check 21 through operational improvements in electronic check clearing and settlement.

Public concern about the efficiency of clearing and settlement for debit cards led Congress to enact the debit card amendment to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. Debit card, notably, is a relatively new method of payment which the Reserve Banks do not clear and settle. Accordingly, Reserve Banks operations do not provide a production cost benchmark against which debit card clearing and settlement efficiency can be measured, and the Reserve Banks are unable to enhance clearing and settlement by leveraging their national processing capabilities. The result is exclusive reliance on direct regulation of bank interchange fees by the Federal Reserve Board to achieve the intent of Congress, rather than reliance on the Federal Reserve System's operational and regulatory capabilities in concert, as was historically the case.

The above discussion of congressional intervention in the national payment system underscores four broad themes. First, it is Congress that traditionally acts to motivate significant reforms in the U.S. payment system. Second, Congress acts when there is a clear public concern about the quality or cost of payment services that the banking system is able or willing to provide on its own. Third, Congress looks to the Federal Reserve Board as the principal authority through which its intentions are to be implemented. Fourth, while regulation by the Federal Reserve Board and operational support by the Reserve Banks have typically been used together to improve payment system effectiveness and efficiency consistent with congressional intent, the case of debit card interchange fees suggests a new approach that relies solely on regulation.

This paper does not investigate the question of whether or how debit card clearing and settlement practices might be different if the Reserve Banks were involved. It is worth noting, however, that in its analysis of debit card fees and clearing and settlement practices, the Federal Reserve Board contrasted the check and debit card payment mechanisms and highlighted two important differences (Board of Governors of the Federal Reserve System 2010b). First, check infrastructure is universal whereas the debit card infrastructure is fragmented; the former depends on Reserve Bank clearinghouse services and a high degree of cooperation among all those sharing the infrastructure, whereas the latter depends on competition among a small number of private infrastructure providers. Second, checks are cleared at par (an intent of Congress when it established the Federal Reserve System in 1913) whereas debit cards are not cleared at par but rather are subject to ad valorem pricing—non-par clearing). Arguably, the Reserve Banks would never have allowed non-par clearing and settlement for interbank debit card payments.

To summarize, whereas the Reserve Banks initially functioned as the de facto national clearinghouse for interbank and consumer payments, their role has been greatly diminished as the Federal Reserve Board has largely limited their involvement to wire transfer, and improvements in check and ACH. This conclusion is illustrated by the decline in the share of consumer payments handled by Federal Reserve Banks, from close to 100 percent originally to no more than 20 percent today (which is to say, not more than one in five noncash payments is made using Reserve Bank clearing services).<sup>15</sup> As a consequence, the Reserve Banks' operational leverage to influence the production cost and pricing of clearing and settlement, and the speed and overall effectiveness of the clearing and settlement process, is now severely constrained. While the operational role of the Reserve Banks has shrunk, the regulatory role of the Federal Reserve Board has expanded with increased, although highly prescriptive, powers assigned by Congress. Congressional action in this area can be characterized as ad hoc and a response to constituents' "pain points."

As the national role of the Federal Reserve System in clearing and settling payments has diminished, no other public or private organization has emerged to represent the collective interests of the many stakeholders. While there are many payment-related organizations, they are either focused on a specific and narrow issue such as security or access channels, and/or they are advocates for trade groups with vested business interests in a particular payment scheme. National payment system governance motivated by public interest considerations has eroded. Today's payment system is characterized more by competition than cooperation, even with respect to clearing and settlement infrastructure. Amelioration of concerns about innovation in clearing and settlement should begin with renewal of public interest governance.

Payment system governance in the United States should be strengthened

What are the possibilities for strengthened governance that results in continuous improvement in clearing and settlement infrastructure, and that ensures that the benefits of such improvements are passed on to consumers? The following discussion evaluates potential public and private sector responses to a call for stronger governance of the payment system that is relied on by consumers, especially in light of needs of the digital economy, and assesses the role that government may need to play in the United States, analogous to the roles government has played in other countries.

It is appropriate to start by considering whether the Federal Reserve System is likely to step up to the leadership challenges facing the payment system in the digital economy. Such consideration needs to distinguish carefully between the roles of the Federal Reserve Board and the Reserve Banks, the former, as was said, being the regulatory authority. Also, the Federal Reserve Board effectively controls the extent to which the Reserve Banks become involved in clearing and settlement. Only the Federal Reserve Board has a legislative basis for reaching out to supply- and demand-side stakeholders to address broad payment system issues and concerns, and, as we have seen, this basis is fairly narrowly drawn.

The Federal Reserve Board states that the duties of the Federal Reserve System fall into four general categories: conducting monetary policy, supervising and regulating banking institutions, maintaining financial system stability, and “providing financial services to depository institutions, the U.S. Government, and foreign official institutions, including playing a major role in operating the nation’s payments system” (Board of Governors of the Federal Reserve System 2005). In the context of this paper, this statement by the Federal Reserve Board is striking because it does not mention overseeing the payment system, developing payment system policy, or facilitating the effective and efficient functioning of the payment system as one of the Federal Reserve System’s duties, except to the extent that the Reserve Banks provide operational services.

Notwithstanding that it excludes the payment system from its current list of duties, over 20 years ago the Federal Reserve Board issued a general policy regarding the Federal Reserve’s role in the payments system, a policy which remains in effect (Board of Governors of the Federal Reserve System 1990). This 20-year-old policy does not clearly distinguish between the roles of the Federal Reserve Board and those of the Reserve Banks, but rather it refers to “the Federal Reserve.” It states that assuring integrity, efficiency, and equitable access are core Federal Reserve responsibilities. Integrity is described as the smooth functioning of the banking and financial markets. Efficiency is described in terms of cost-saving technical innovations whose adoption can be promoted by incorporating them into Reserve Bank operations. Equitable access is described in terms of the availability of Reserve Bank services to all depository institutions. The policy statement emphasizes recovery of the Reserve Banks’ costs as services providers and limits on expansion of Reserve Bank services.

An examination of the Federal Reserve Board’s web site and its annual report (Board of Governors of the Federal Reserve System 2011) suggests that it has little appetite for engaging in issues facing consumer payments, unless the issues are directly related to the Reserve Banks’ check and ACH services. This is in contrast to the Federal Reserve Board’s keen and active interest in supervising and regulating systemically important payment institutions, an interest that is long standing and has recently been formalized in legal powers assigned by Congress in the Dodd-Frank Act.<sup>16</sup> Central bank best practice is to explicitly inform the public as to which payment systems and institutions fall within the ambit of their oversight, supervision, or regulation. The Federal Reserve Board identifies the key financial market infrastructures in which it is interested and these consist of only large-value systems.

The Federal Reserve Board has a Payments System Policy Advisory Committee whose purview includes “retail and wholesale payment systems and instruments” and “strategies to foster the safety, efficiency, and accessibility of the U.S. dollar payments system over the long term.” The Committee’s agenda and deliberations are not public, however. The only evidence of its interest in the “retail” payment system is an occasional public forum such as the ones cited earlier in this paper. The frequency and subject matter of these forums, and the limited

follow-up after the forums, further suggest that neither the Committee or the full Board have an ongoing interest in or commitment to public policy pertaining to consumer payments.

Members of the Federal Reserve Board occasionally speak on payment system topics. When they do, they tend to focus on systemically important payment systems (Bernanke 2011) or on checks and ACH (Ferguson 2003). The Federal Reserve Board is further signaling through the public appearances of its members that what matters to the central bank is systemic financial risk and the specific operational services provided by the Reserve Banks, but not the payment system broadly viewed.

As indicated earlier, the Federal Reserve Board has, or at least has had, considerable leverage to influence payment system developments through the Reserve Banks' operational services, which it supervises. This leverage has been used to great effect in modernizing and improving the safety and cost efficiency of the clearing and settlement services the Reserve Banks provide. In this connection, and in the context of this paper, the Federal Reserve System deserves enormous credit for the advances made in checks and ACH. As noted, however, checks and ACH have been outstripped by newer forms of payment, and the Federal Reserve Board has tightly restricted the expansion of Reserve Bank services beyond checks, ACH, and wire transfer. The Federal Reserve Board's concern is that new services would broaden Reserve Bank competition with the private sector. Rather than provide strong incentives to the Reserve Banks to innovate in clearing and settlement, the Federal Reserve Board seems to place almost exclusive weight on matching costs and revenues by service line as a determinant of success (Board of Governors of the Federal Reserve System 2011). The Federal Reserve Board seems satisfied with a strategy for Reserve Bank services that would have them keep a low profile and largely withdraw in an orderly way from clearing and settlement operations.

It can be concluded from the above discussion that the Federal Reserve Board is not interested in leading or guiding the development of clearing and settlement capabilities for payments in the digital economy. Moreover, the Federal Reserve Board is satisfied to give up the Reserve Banks' operational leverage as providers of interbank clearing and settlement services. Absent an engaged Federal Reserve Board role, is it likely that private organizations might step up to assume responsibility for organizing and leading national payment system governance? This, too, appears unlikely based on how prominent private organizations with an interest in payments are constituted and how they define their purpose and goals. The purposes and goals of three organizations that might naturally be considered for a national leadership role are reviewed below.

The American Bankers Association (ABA) is the largest and most prominent association of financial institutions in the country. The ABA's self-described purpose is to represent the interests of all banks regardless of size and location. The ABA has formidable analytical and policy development resources at its

disposal, judging from the range of carefully prepared position papers available on its website. The ABA devotes attention to topical payment system issues, such as the Dodd-Frank interchange fee legislation (and the Federal Reserve Board's rule writing to implement that law). Its work also reflects the long-standing concerns of its members about unfair competition from nonbanks in the payment system. The ABA is an industry association and is unlikely to take up public policy concerns about payment system development unless these concerns overlap with the business interests of its member banks. In any event, it is not clear that an industry association would have the instincts or capabilities to organize and lead a governance body which, to be successful, would need to include a broad range of stakeholders in addition to banks.

The Clearing House (TCH), which is still thought of by many as the New York clearing house, is another prominent private sector organization representing banks. It is also a major provider of wire transfer of funds (CHIPS), ACH (EPN), and electronic check (SVPKO) services to banks. The Clearing House makes significant contributions to payment system development, through management of its own services and through its policy analysis of regulatory proposals. Like the ABA, however, TCH's purpose is bank advocacy, and this advocacy is on behalf of a relatively narrow member base consisting of "the world's largest commercial banks." It, too, is not well constituted to develop and lead a broadly based payment system governance body.

Finally, the National Automated Clearinghouse Association (NACHA), which bills itself as The Electronic Payments Association, is a truly national organization that is the de facto scheme owner for the commercial ACH system.<sup>17</sup> Unlike the ABA and TCH, NACHA's membership is inclusive of all financial institutions that participate in the ACH, and it makes an effective effort to include the users of ACH services in decisions about ACH rules and the strategic direction of this payment mechanism. NACHA limits its activities to management of the ACH scheme and leaves operations to others. The foregoing qualities are characteristics that one would look for in a well-designed governance organization. However, NACHA's priorities are strongly focused on the success of the ACH network, which it describes as "the backbone for the electronic movement of money and data." While ACH may be a backbone, its rules and operational modalities are closely patterned after older payment paradigms including batch processing and delayed clearing and settlement. As an industry trade association that advocates and protects the interests of the ACH industry, NACHA is poorly positioned to lead payment system governance whose purpose is to match the pace of change in digital society, especially change that would be likely to disrupt the business plans of financial institutions and ACH operators and services providers.

It can be concluded from the above review of the purposes and goals of the ABA, TCH, and NACHA that these organizations are not well constituted to organize and lead national payment system governance. This is especially the case in



today's digital economy, where traditional payment system modalities and business models are subject to dramatic pressure to change. In particular, it is unlikely that private sector organizations that represent the interests of trade associations and business interest groups would be able to lead the development of new clearing and settlement arrangements along the lines of the IFT reference model described in this paper.

Congress holds the key to stronger payment system governance

The Federal Reserve Board and prominent private sector organizations appear unable to lead payment system development in the digital economy. This leaves direct governmental action as the only practical alternative for initiating needed changes in payment system governance. As we have seen, the typical approach taken by governments is to empower a commission with the mandate to analyze needs from a public policy perspective and then recommend actions to address public interest concerns. Such recommendations typically include incentives for active public interest governance of the payment system, and a major and possibly leading role for the private sector.

In fact, the U.S. Congress established such a commission in 1974, the National Commission of Electronic Fund Transfers (hereafter the Commission). The Commission's 1977 report played an important role in guiding the development of the U.S. payment system in the decades that followed (National Commission on Electronic Fund Transfers 1977). The report is a tome, and it is not the purpose of this paper to recapitulate its findings. Two aspects of the Commission report are particularly pertinent to this paper, however. First, the Commission articulated a consumer-centric vision for a new method of payment which, if introduced, would have been the foundation for a digital payment capability like IFT. Second, the Commission did not make any public interest governance recommendations, but rather it placed heavy reliance on the competitive marketplace, appropriately regulated, to lead the development of the payment system. Absent from the Commission's thinking about or analysis of the payment system is the concept of network, and the implications of network effects and incentives for cooperation among stakeholders. The omission of public interest governance recommendations and network considerations may have doomed its vision for future digital payments.

The Commission strongly encouraged development of a new, giro-like credit transfer system so that U.S. consumers and businesses would benefit from payment features available in Europe but not here. It accompanied this endorsement with recommendations that standard invoicing and billing procedures be incorporated into giro-like payments. The IFT systems springing up around the world are, like the IFT reference model illustrated in this paper, essentially giro designs updated to meet the needs of the digital economy. One can wonder whether an IFT vision would be realized in the United States today had the Commission also recommended new governance arrangements that are friendly to innovation.



The Commission's report was prepared at a time when today's technologies not only did not exist but were unimaginable (the Internet was not in the thinking of the commissioners and the concept of network, and the implications of network effects and incentives for cooperation among stakeholders is notably absent from the analysis). Also at the time, social interactions were much more narrowly conceived (there is no inkling of "connectedness" in the Commission's report). Thirty-five years is a long time, especially when change is measured by super-fast "Internet time," and a strong case can be made that we are overdue for a new national payment system commission in the United States. The new commission, however, would need to deliberate and make recommendations quickly if the payment system is to catch up with changing needs in today's digital society and economy.

## **CONCLUSIONS AND RECOMMENDATIONS**

Consumers in the digital economy, including individuals, businesses, and governmental entities, value a digital payment method that allows them to complete their transactions immediately, reliably, securely, and at acceptable cost. This method of payment, already in use elsewhere in the world and known as Immediate Funds Transfer (IFT), is described in this paper. An IFT is an immediate and final credit transfer whose completion is communicated to the sender and receiver of payment in a matter of seconds. A digital payment system such as IFT could and probably should also satisfy the long-standing need of consumers for a highly versatile method of payment that universally connects them through their accounts in banks, as does the check today. The National Commission on Electronic Fund Transfers envisioned IFT in its recommendations of 1977.

Despite a vision provided 35 years ago, and despite evidence of consumer demand dating back a decade or more, and notwithstanding successful commercial experience in a number of countries around the world, the U.S. payment system does not appear close to implementing IFT-like capabilities. Governance issues appear to be the primary barrier to innovation in clearing and settlement that would support immediate completion of digital payments in the United States. Effective governance will be guided by public policy considerations including financial stability, operational reliability and security, effectiveness, and efficiency, all envisioned in practical terms that are meaningful to end users of consumer payments in our digital society and economy. The lack of public interest governance is evidenced not only by the failure of the U.S. payment system to keep up with changes in the digital economy, but also by regressive developments such as a retreat from par clearing (taking the form of ad valorem pricing) and from universal clearing and settlement of payment instruments.

Governance must encourage a consumer-centric, end-to-end view of payment system development, cooperation in the adoption of end-to-end payment schemes and shared clearing and settlement infrastructure, and competition in payment services using the shared infrastructure. Unfortunately, neither the Federal Reserve Board nor prominent private sector organizations have either the

interest or the ability to lead payment system development into the digital age. For better or worse, the U.S. Congress appears to hold the key to stronger payment system governance today, as it did 35 years ago when it established the National Commission on Electronic Fund Transfers.

The following recommendations are intended as concrete action steps leading to upgraded payment services to U.S. consumers in the digital economy.

1. The Federal Reserve Board should clarify its role and that of the Federal Reserve Banks in the existing consumer payment system and its future development. This can be accomplished by issuing a new policy statement to replace that last issued by the Federal Reserve Board in 1990. The Federal Reserve Board's clarified policy should specifically describe the operational contribution it expects the Reserve Banks to make as providers of clearing and settlement services in the digital economy, if any, and its own role as overseer, if any.

2. The Federal Reserve Board and/or U.S. Treasury should engage the appropriate congressional committees about the need for a national commission on payment system innovation in the digital economy. The new commission should give priority attention to public policy goals and public interest governance of the U.S. payment system, with particular focus on the needs of consumers in the digital economy. The commission should take care to be well informed about consumer payment system developments globally and the possibilities that these developments hold for innovation in the U.S. payment system.

3. The Federal Reserve Banks should perform a benchmark assessment of implementing national clearing and settlement processes and infrastructure to support immediate completion of digital payments, along the lines of the IFT reference model described in this paper. The design assessment should be end-to-end, including interbank and bank-to-customer interactions, and should consider the possibility of centrally provided, standardized bank-side operational capabilities for connecting their customer accounts through a national clearinghouse.

4. The Federal Reserve Board should develop a special-purpose bank charter for providers of specialized payment services, allowing in particular for the inclusion of nonbanks that are payment system innovators and payment method providers in the nation's money and banking system for payments.

## ENDNOTES

<sup>1</sup>For example, see *fasterpayments.org.uk* for data on the adoption of Faster Payments as a new method of consumer payment in the U.K.

<sup>2</sup>There are two basic approaches to payment that are distinguished by their respective clearing and settlement processes, namely, credit transfers (so-called “credit push”) and debit transfers (so-called “debit pull”). For credit transfer, clearing instructions and settlement move together, directly from sender to receiver. For debit transfer, clearing instructions move less directly from sender to receiver, then from the receiver to the sender’s bank, entailing return item risk for the receiver and the receiver’s bank, and ultimately trigger settlement in bank accounts.

<sup>3</sup>The Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York are represented on the Committee on Payment and Settlement Systems.

<sup>4</sup>In addition to focus group findings by the Federal Reserve Board cited earlier in this paper, other research identifies payment attributes that individual and business consumers consider important (see Foster et al 2011, and Association for Financial Professional 2010).

<sup>5</sup>An important practical question that is beyond the scope of this paper is how and to what extent immediate completion of payment affects information security. The answer to this question depends critically on the effect of speed on risk management and whether the underlying payment process is credit transfer or debit transfer. Arguably, a security model based on real-time risk management and strong control over key decision points can enhance security. Also, the credit transfer process presents an inherently easier security problem to solve than does debit transfer.

<sup>6</sup>Increasingly, the ease with which consumers can change their banking relationships is a public policy priority in a number of countries. A notable example is the U.K., where the Payments Council is adopting an account switching guarantee (complete within seven days) on the recommendation of the 2011 Independent Commission on Banking.

<sup>7</sup>In some cases involving two-sided markets the collective interests of payment system users may be best served if costs are not shared equally or proportionally. At the same time, however, efficient pricing does suggest that the total revenue extracted for use of a payment method should bear a reasonable relationship to the cost of production.

<sup>8</sup>The full processing efficiency gains of digital payments are enabled by standards that allow for straight-through-processing. The requisite standards include account number, reference number, and e-invoicing standards that can be integrated with digital payment systems. Full integration based on international standards

is well established in the Nordic countries and a priority undertaking in Europe (Leinonen 2009).

<sup>9</sup>The model underlies IFT schemes in developed economies where bank deposit money is most common, but also in developing financial economies where cash is the principal form of fiat money, for example, M-PESA in Kenya. It also underlies IFT services offered by nonbanks, such as PayPal and CashEdge.

<sup>10</sup>National IFT implementations around the world follow both the private and public (that is, central bank) clearinghouse approaches. For example, the United Kingdom and South Africa rely on a privately operated clearinghouse, whereas Mexico and Switzerland rely on the national central bank as the clearinghouse (Summers and Wells 2011). It is important to emphasize that in both cases, consumer settlement is in commercial bank money, whereas interbank settlement is in central bank money.

<sup>11</sup>Hypothetically, if the bank of the receiver of an IFT defaulted on a net debit obligation arising from the IFT settlement, the customer would still have final use of the funds deposited as a result of the transfer, but in a deposit account held with a distressed bank. If the bank of the sender defaulted, all payments accepted by the receiving bank and credited to the accounts of its customers would be available deposits received in the form of final funds transfers.

<sup>12</sup>Interbank settlement for Real-Time Clearing takes place once each hour and for Faster Payments at intervals of several hours.

<sup>13</sup>Most IFT implementations rely initially on existing communication channels such as ATM and online or Internet banking, and then progress and expand to mobile channels using smartphones. Mobile banking on smartphones that exploits telecommunications features such as SMS and email are considered to be a natural match with IFT.

<sup>14</sup>See, for example, Brimmer (1967). In this speech Governor Brimmer speaks to issues of clearing credit card slips and why the national check clearing system should not be burdened.

<sup>15</sup>It is estimated that the Reserve Banks' share of the total number of non-cash payments processed in 2009, excluding wire transfer, is 19 percent, computed as follows using data from the Federal Reserve's 2010 payments study (Board of Governors of the Federal Reserve System 2010a). The Reserve Banks handled about 35 percent of all commercial checks (excluding checks converted to ACH) and about 58 percent of ACH items. The check and ACH shares of total noncash payments were 27 percent and 17 percent, respectively. Thirty-five percent of 27 and 58 percent of 17 total 19 percent. This analysis results from work in which I was engaged with colleagues in the Federal Reserve Bank of Chicago Financial Markets Group, serving there as a consultant.

<sup>16</sup>The Dodd-Frank Act for the first time gives the Federal Reserve Board

explicit authority to regulate and supervise systemically important payment systems and institutions. Unlike the case in a number of other countries, the new legislation is silent on the subject of oversight of consumer payment systems. It is likely that the Board and its staff influenced the thinking of the drafters of the congressional legislation, and assuming so, they apparently did not consider broader oversight powers, extending to consumer payments, to be significant.

<sup>17</sup>The U.S. Treasury determines the rules for government ACH payments.

## REFERENCES

- Association for Financial Professionals (2010). "2010 AFP electronic payments: Report of survey results," November 2010.
- Bank for International Settlements (2011a). "Principles for financial market infrastructures—Consultative report," Committee on Payment and Settlement Systems, March 2011.
- \_\_\_\_\_ (2011b). "Payment, clearing and settlement systems in the CPSS countries," Committee on Payment and Settlement Systems, September 2011.
- Bernanke, Ben S. (2011). "Clearinghouses, Financial Stability, and Financial Reform," remarks at the 2011 Financial Markets Conference sponsored by the Federal Reserve Bank of Atlanta, April 4, 2011.
- Board of Governors of the Federal Reserve System (1990). "The Federal Reserve in the Payments System."
- \_\_\_\_\_ (2002a). "The Future of Retail Electronic Payments Systems: Industry Interviews and Analysis," Forum hosted by the Payments System Development Committee, Staff Study 175, December 2002.
- \_\_\_\_\_ (2002b). "Summary of Closing Remarks by Roger W. Ferguson, Jr. at the Conference The Payments System in Transition," Conference hosted by the Payments System Development Committee, Oct. 30, 2002.
- \_\_\_\_\_ (2005). *The Federal Reserve System: Purposes & Functions*, Washington, D.C., June, 2005.
- \_\_\_\_\_ (2006a). "A summary of the roundtable discussion on the role of wire transfers in making low-value payments," Roundtable hosted by the Payments System Policy Advisory Committee, May 16, 2006.
- \_\_\_\_\_ (2006b). "A Summary of the Atlanta Forum on Transforming U.S. Retail Payments," Forum hosted by the Payments System Policy Advisory Committee, Nov. 2, 2006.
- \_\_\_\_\_ (2010a). *The 2010 Federal Reserve Payments Study—Noncash Payment Trends in the United States; 2006-2009*, research report, Dec. 8, 2010.
- \_\_\_\_\_ (2010b). "Debit Card Interchange Fees and Routing," Notice of proposed rulemaking, Dec. 16, 2010.
- \_\_\_\_\_ (2011). 97th Annual Report 2010, June 2011.
- Biehl, Andrew, James McAndrews, and Chris Stefanadis (2002). "A Review of the Retail and Wholesale Markets for Funds Transfers," unpublished manuscript, June 2002.

- Brimmer, Andrew F. (1967). "Bank Credit Card and Check-Credit Plans: Development and Implications," remarks to commercial bankers and board of directors, Federal Reserve Bank of San Francisco, Aug. 3, 1967.
- Cruikshank, Don (2000). *Competition in UK Banking: A Report to the Chancellor of the Exchequer*, London, Stationary Office.
- European Central Bank (2003). "Oversight standards for euro retail payment systems," June 2003.
- Ferguson, Roger W. Jr. (2003). "Major Themes from the Conference The Payments System in Transition, hosted by the Federal Reserve Payments System Development Committee, Oct. 30, 2003.
- Foster, K., E. Meijer, S. Schuh, and M. Zabek (2011). "The 2009 survey of consumer payment choice," Public Policy Discussion Papers, Federal Reserve Bank of Boston, April 2011.
- Gerdes, G.R. (2008). "Recent payment trends in the United States," *Federal Reserve Bulletin*, October 2008.
- Kuttner, K., and J. McAndrews (2001). "Personal on-line payments," *Economic Policy Review*, Federal Reserve Bank of New York, December 2001.
- Leinonen, Harry (2009). "The Changing Retail Payments Landscape: An Overview," *The Changing Retail Payments Landscape: What Role for Central Banks?* International Payments Policy Conference Sponsored by the Federal Reserve Bank of Kansas City, Nov. 9-10, 2009.
- Mitchell, George W. (1974). "Role of the Federal Reserve in the Payments Mechanism," *Proceedings of the 1974 Payments System Policy Conference: EFTS Decisions Needed Now!*, American Bankers Association, Dec. 1-3, 1974.
- National Commission on Electronic Fund Transfers (1977). *EFT in the United States: Policy Recommendations and the Public Interest*, Oct. 28, 1977.
- Smee, Paul (2012). "The governance of payment systems: A UK blueprint," in *Payment Systems: Design, Governance and Oversight*, ed. by Bruce J. Summers, Central Banking Publications, forthcoming.
- Summers, Bruce J., and Kirstin E. Wells (2011). "Emergence of immediate funds transfer as a general-purpose means of payment," *Economic Perspectives*, Federal Reserve Bank of Chicago, Third and Fourth Quarter, 2011.
- Summers, Bruce J. (2012). "Payment system design and public policy," in *Payment Systems: Design, Governance and Oversight*, ed. by Bruce J. Summers, Central Banking Publications, forthcoming.