CHAPTER 17

The Central Bank’s Role in the Payment System: Legal and Policy Aspects

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Standing at the apex of the tiered account relationships through which interbank payments are typically settled, central banks have long played a critical role as payments intermediaries. In particular, central banks have historically performed the function of “providing banks with deposits and a means of transferring them to make interbank payments,” a function Jeffrey Lacker, president of the Federal Reserve Bank of Richmond, has called “the fundamental core of central banking.” Of course, payment systems, as the discussion in this chapter will indicate, have specific legal, technical, operational, and other institutional characteristics, which may differ from time to time (reflecting technological and other developments), from country to country (principally reflecting legal, regulatory, and policy considerations), and from system to system (reflecting the needs of payment system users and others). As a result, the precise function that central banks perform in a particular payment system may vary considerably depending upon the institutional characteristics of the payment system.

Some payment systems, such as the Fedwire Funds Transfer Service in the United States, are real-time gross settlement (or RTGS) systems, in which each payment instruction is processed individually (in gross), on an instruction-by-instruction basis. Each Fedwire payment is settled individually by means of a credit transfer at a Federal Reserve Bank. The Canadian Large Value Transfer System (LVTS), by contrast, is a net settlement system, or more precisely, a continuous net settlement (CNS) system. LVTS utilizes real-time net processing, in which net (as opposed to gross) payment obligations among system participants are settled by means of offset and/or end-of-day credit transfers at the Bank of Canada. Both Fedwire and LVTS result in effective and final transfers of credit money between account holders. There are, however, important institutional
differences between the two systems, particularly concerning the roles of the Federal Reserve and Bank of Canada, respectively, in each system. This chapter discusses only one of those differences—the operations through which legally effective settlement of interbank payment obligations takes place.

Because a payment system can be characterized as a specialized network, it is possible to use concepts and terminology drawn from complex-network analysis to better understand the relationships among the many parts of the system. Using that terminology, this chapter proposes a simple descriptive typology of payment arrangements that may clarify the interaction between central banks and commercial banks in the settlement of interbank payment obligations.

The chapter starts with a brief overview of the payment system and the roles central banks have traditionally played as payment intermediaries. In particular, it discusses interbank settlement and the role of bank money as a settlement asset. The chapter shows that the concept of settlement finality, which has both legal and risk-management dimensions, is a basic attribute of payment transactions (unless those transactions are “provisional”) not a unique attribute of payments made through a central bank.

The chapter then considers whether the central bank has a comparative advantage with respect to private-sector banks in its role as a payments intermediary. In particular, it highlights the inherent tension between: (1) maximizing the use of credit money emitted by the central bank (so-called central bank money) as a settlement asset; and (2) maximizing the ability of transactors to choose among alternative settlement assets (including central bank money and commercial bank monies), together with related value-added services (such as credit or custodial services). In other words, a policy preference for settlement in central bank money involves both costs and benefits.

This analysis is timely, given recent developments in payment systems, particularly in the Eurozone, where the European Central Bank (ECB) has launched the TARGET-2 Securities initiative, a proposal to extend special central bank settlement services to central...
securities depositories (CSDs), such as Euroclear and Clearstream. Moreover, it has important implications for central bank competition with private-sector banks, especially because central banks have articulated the concept of “ultimate settlement, a conflation of the risk and legal attributes of settlement into what amounts to an implicit preference for settlement in central bank money.” The existence of inherent and unavoidable trade-offs in defining the proper role of the central bank in the payment system is masked, in part, because of persistent confusion regarding the various meanings of settlement finality. This chapter is therefore intended as a step toward a better understanding of settlement finality, as well as the importance of competitive considerations in the choice of whether to expand the central bank’s role as a provider of interbank settlement assets.

A complete cost-benefit analysis of the roles central banks typically play in interbank payment systems would require careful consideration of numerous design and operational characteristics of each system, a task far beyond the scope of this chapter. Instead, the chapter is simply an introduction to one set of legal and policy considerations relating to the role of the central bank in the interbank payment system.

**The Role of the Central Bank in the Payment System**

Whatever else central banks may do—and the list of functions they perform is a long one—they almost always play a foundational role in the payment system. Indeed, Stephen Millard and Victoria Saporta, in their background paper to the Bank of England’s May 2005 conference, “The Future of Payments,” observe that:

Central banking and payment systems—systems consisting of a settlement asset, credit arrangements, infrastructure and rules over which monetary value can be transferred—are inextricably linked. In a number of countries, central banking institutions evolved naturally or were imposed by the state to provide the ultimate settlement asset at the apex of the payment hierarchy.
This chapter is concerned with only a single aspect of the role central banks play in the payment system—that of providing what Millard and Saporta have called “the ultimate settlement asset at the apex of the payment hierarchy.” That role has two components: (1) the position the central bank occupies at the apex of a hierarchical structure of tiered accounts used to settle interbank payment obligations; and (2) the provision of credit money, commonly called “central bank money,” as a settlement asset for interbank transactions. Before discussing some of the costs and benefits associated with the use of central bank money as a settlement asset, it is necessary to understand these components.

In a 2001 article on the Federal Reserve’s role in the payment system, Edward Green and Richard Todd note that;

Historically, central banks have been chartered to perform two functions: One is to be an intermediary between the government and its lenders, enabling the government to obtain credit by ensuring that implicit default through inflation will occur only in genuine national emergencies. The other is to serve broad public interests as the trustworthy and neutral apex of a hierarchy of banks that, in turn, provide the nonblank public with accounts used to settle financial, business, and personal payments by transfer of balances.

Green and Todd conclude that “[t]he role as the apex of the banking hierarchy puts the central bank in a unique and distinguished position in the payments business.”

Jeffrey Lacker offers a basis for understanding the importance of that role based upon the insight that “[i]ssuing, clearing and settling payment instruments are essentially communication and record-keeping activities.” In payment systems, as in other communications arrangements, Lacker argues:

Efficient communication arrangements often take the form of networks in which many paths connect through a central node. A clearinghouse can be viewed as a natural club arrangement for such centralized settlement activity. A
central bank then represents a nationalized central settlement node for interbank payments. Contemporary legal restrictions more or less compel most banks to settle through the central bank."^{21}

While there is much here that deserves close attention, the focus of this chapter is on Lacker’s explanation for the development of the hierarchical structure characteristic of most account-based payment systems and the position the central bank (or a private-sector clearinghouse) typically occupies at the apex of that structure. It is noteworthy that this explanation does not depend upon the existence of a public-sector institution such as a central bank. Indeed, Lacker explicitly equates the structural role played by central banks with private-sector clearinghouse arrangements.^{22}

Lacker’s explanation for the position central banks occupy at the apex of the payment system appears to be consistent with the historical development of central banks, as described by Millard and Saporta:

> Historically, the evolution of central banking can be traced back to the market’s natural demand for an efficient way to make payments. This natural demand can lead to the development of a hierarchy or pyramid in payments with the liabilities of a proto central bank at its apex, as the "settlement asset" of choice. In other words, central banks can emerge naturally from their payments role.^{23}

This description connects the two components of the central bank’s role as the provider of “the ultimate settlement asset at the apex of the payment hierarchy.” Lacker’s network analysis explains why the payment system is configured as a hierarchical structure, with a payments facilitator (either public or private) at the apex. Millard and Saporta connect that structural position to the role played by a settlement institution as the provider of a settlement asset. That role can, as they note, be performed either by a private-sector bank or a central bank.

In their role as payment intermediaries, central banks typically function as hubs, with spoke-like connections (account relationships)
to all of the nodes (private-sector banks that have accounts at the central bank) in the system, forming a network (the interbank payment system) that is sometimes described as a star. The Fedwire Funds Transfer Service is an example of a payment system in which the central bank functions as a network hub. Certain private-sector payment networks, such as the Clearinghouse Interbank Payment System (CHIPS) for U.S. dollar payments and the Continuous Linked Settlement (CLS) system for foreign currency settlements, exhibit a similar hub and spoke structure—though with important institutional differences not relevant to this discussion. On the other hand, banks have historically maintained so-called correspondent relationships to transfer money on a bilateral basis that do not exhibit a hub-and-spoke structure. Although correspondent banking arrangements are probably less important today than the network alternatives, at least for purposes of interbank funds transfers, they nevertheless represent an important alternative to hub and spoke arrangements.

Based upon this description, a simple typology of institutional arrangements for the settlement of interbank payment obligations in credit money emerges. Such settlements may be conducted through (1) central bank-centered networks, such as Fedwire, where a central bank serves as the network hub and provides the underlying settlement asset; or (2) private-sector networks, such as CHIPS and CLS, where the network hub, if there is one, is provided by a private sector institution (either a bank or a bank service provider) and the settlement asset, if there is one, is provided either by a commercial bank (as in the CLS system) or central bank (as in CHIPS); or (3) through direct bank-to-bank correspondent arrangements, in which there is no network hub and the settlement assets are provided by the commercial banks that participate in the arrangement.

Based upon this simple typology, we can draw three important conclusions:

- Payment obligations can be discharged without the use of a settlement asset (as in net settlement systems, such as CHIPS and LVTS);
Both central banks and commercial banks take deposits and create credit money (central bank money and commercial bank money, respectively) that can be used as an interbank settlement asset (as in RTGS systems, such as Fedwire, and private-sector systems, such as CLS, as well as in bilateral correspondent relationships); and

The structure of the network through which interbank payments are conducted may have important implications for the choice of settlement asset.

In short, users of the payment system, have a choice to transmit payments through (1) a system in which the central bank functions as a hub (and settlement is in central bank funds) or (2) through some other mechanism. The next section of this chapter expands the explanation of the choice of settlement asset and clarifies one of the key attributes of a payment in any form of money, from cash to checks to credit money—namely, the finality of payment.

Assets for the Settlement of Interbank Payments

Payment obligations can be settled in a variety of ways. Each has its own unique characteristics, benefits, and disadvantages. The Red Book, published by the Committee on Payment and Settlement Systems (CPSS), summarizes these alternatives as follows:

[A] variety of payment instruments and settlement mechanisms are available to discharge payment obligations between and among financial institutions and their customers. These payment instruments vary considerably in their characteristics, such as cost, technology, convenience, funds availability and finality, as well as in orientation towards consumer, commercial and interbank transactions.”

A settlement asset is generally defined as “an asset used for the discharge of settlement obligations as specified by the rules, regulations or customary practice for a payment system.”

The two major settlement assets are cash (i.e., specie and paper currency) or credit money. Cash is the oldest and probably best
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understood settlement asset. For thousands of years, specie in the
form of gold, silver, and other precious metals, and paper currency,
were used to meet payment obligations. Settling obligations through
cash is particularly useful for small purchases and for payment
obligations that are done in routine face-to-face transactions. In
modern society, however, cash is logistically difficult to use for large
transactions. Both the storage and delivery of large amounts of cash
presents difficulty. For example, it would require the delivery of
200,000 US$100 bills to meet a US$20 million obligation in cash.

Credit money represents a claim on an intermediary and is
considered to be just as important a settlement asset as cash:

In the commercial world, large transactors consider bank
credit to be the functional equivalent of money. In fact, bank
credit may be even better than money when one considers
the feasibility of closing a US$200 million acquisition with
federal reserve notes.36

Credit money is typically divided into commercial bank funds or
central bank funds.

Commercial bank funds result from deposits made in commercial
banks. The depositor then receives in return a new settlement asset
such as a demand deposit account that can be used as a settlement
asset. Through the use of checks and wire transfers, individuals can
settle payment obligations easily and efficiently.

Just as depositors deposit funds in commercial banks and receive
in exchange a settlement asset, large financial institutions can also
deposit funds in central banks and receive a settlement asset in the
form of central bank funds. A financial institution can then direct a
central bank to move these central bank funds from its own account
into the account of another financial institution to settle its payment
obligations, either to that financial institution or to a customer of that
institution.

Participants often consider central bank funds as being risk-free
because central banks are often thought to be “more creditworthy
institutions than commercial banks in their own currency” and

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because they have “explicit state support.” Central bank funds are also considered to be more liquid because of a central bank’s “ability to inject very large amounts of liquidity, where appropriate, in order to facilitate the smooth operation of large-value payment systems.”

Figure 1 is a diagram of an interbank payment system that results in the creation of credit money.

**Figure 1**
Interbank Payment System

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**Finality**

One of the principal claims for the advantage of payment and settlement in central bank funds over other settlement assets is that of finality. While the satisfaction of payment obligations through the use of central banks does enjoy a special status in some jurisdictions that is often referred to as “ultimate settlement,” the advantages of finality are typically a function of the legal rules governing finality as opposed to the type of settlement asset selected.
Finality can perhaps be best understood through the use of a simple example using cash as the settlement asset. For example, when an individual purchases a newspaper using cash, finality exists, as explained by Ronald Mann: “[I]f a consumer pays with cash, the ‘payment’ is final at that moment, in the sense that the consumer cannot recover the cash.”

What is typically meant by finality is that the recipient of the settlement asset has immediate use of the funds and does not have to wait for conditional payments to become final, and it reduces buffer stock (i.e., cushion) of money for liquidity. The Committee on Payment and Settlement Systems states that “[finality] is achieved when settlement of an obligation is irrevocable and unconditional.”

Just because the transaction has finality, however, does not mean that an individual does not retain some possible claims. In Mann’s newspaper example, he explains the newspaper’s position as follows:

Of course, the consumer might obtain a separate right to payment from the merchant by establishing some separate claim under the contract in question. That is quite a different thing from a right to retract the payment itself.

The payment was final between the purchaser and the newspaper vendor when the purchaser turned over the cash, meaning that the vendor had immediate use of the funds and the purchaser could not stop payment or claw the payment back. However, if the newspaper was yesterday’s news or otherwise deficient, the purchaser may have some claim for breach of contract against the vendor, regardless of how “final” payment was.

Finality is important because it minimizes systemic risk. It avoids payments from being unwound (i.e., disallowed after reliance). It also avoids the cascading effect of unwound payments. Finally, as payment systems become more interrelated and larger, it helps minimize systemic risk and maximize legal certainty.

Finality also increases legal certainty in payment systems. It increases confidence of participants in using payment systems, and increases legal certainty regarding the treatment of payments in
litigation. It can result in increased payment system volumes, providing greater liquidity. It also provides a sound foundation for systemically important payment transactions. Finally, it minimizes migration to other payment systems.

The importance of finality of payment can also be understood when it is compared with provisional settlement. The defining characteristic of a provisional or conditional payment is the ability of the transferor to stop or claw back a payment made. Finality of payment is delayed, for example, when a paper check is written on a U.S. bank. Under U.S. law, the payor may stop payment on a payer check until the presentment of the check at his bank. This effectively places the recipient of the check at risk until the check has cleared the payor’s bank.

Provisional or conditional payment also existed in several deferred net settlement payment systems. Although these systems are now obsolete, they are illustrative of provisional settlement. For example, both CHIPS and the Canadian International Interbank Payment System (now superseded by LVTS) provided for varying periods of finality (either at the end of the day or the next business day). In contrast, in current payment systems, finality typically is achieved in real time as each payment is cleared and settled.

The legal basis for finality is not a function of whether payments are settled in cash, through commercial bank funds, or through central bank funds. Instead, it is a function of the legal rules that affect that system. The CPSS notes that “finality within an interbank payment system is generally determined by the system’s rules and the legal framework within which the rules function.” Thus there are alternative bases for finality:

- A contractual basis, in which the parties to a banking relationship (namely, a bank and its customer) or the participants in a payment system may agree that payments will be considered final under the circumstances defined by the contract between or among them; and
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- A statutory or common law basis, in which applicable law governs the finality of payments where an effective agreement does not exist among the relevant parties.

For example, finality for check and fund transfers is governed in the United States by each state’s uniform commercial code, a statute that governs the majority of commercial transactions. Finality for Fedwire is determined by the new York’s Uniform Commercial Code (UCC)\(^44\) and Regulation J\(^45\) promulgated by the Federal Reserve. Finality for CHIPS is a function of both contract law and applicable statutory law.\(^46\) For TARGET (the real time gross settlement system for euro-denominated payments), finality is governed by the Settlement Finality Directive\(^47\) promulgated by the European Union. National legislation also governs finality in various Eurozone countries. Finally, finality in Canada’s payment system is governed by the Canadian Payments Act.\(^48\)

If a particular form of settlement asset enjoys greater finality than a different settlement asset, such advantage is not the result of whether it is central bank funds or commercial bank funds. Instead, such a result typically stems from special statutory or regulatory rules put in place by policy makers. The Committee on Payment and Settlement notes that “[i]n general, the law does not distinguish between assets in this respect: settlement finality is no easier or harder to achieve in central bank money than in any other asset.”\(^49\)

Finality Through Interbank Payment Systems

This section discusses achieving finality through interbank systems and compares the costs and benefits of clearing and settling through central bank funds versus commercial bank funds. The costs and benefits of each should be weighed carefully before selecting one settlement asset over the other. Although central bank funds may enjoy some benefit with respect to finality over commercial bank funds, such benefits may be outweighed by other costs incurred in using central bank funds.
Payment System Characteristics and Finality

Finality is achieved in an interbank system by settling through a central bank in central bank funds, through a commercial bank in commercial bank funds, or through a combination of the two types of settlement assets. There are many different large-value payment systems currently in use throughout the world. The most common ones are Fedwire, CHIPS, LTVS (Canada), TARGET (Eurozone), and CLS. The payment systems can be according to several characteristics:

- Ownership or operation: public or private;
- Operational considerations: gross, net, or hybrid;
- Settlement through central bank money or commercial bank money;
- Finality (the one constant): all systems provide for legal finality.

Table 1 summarizes these characteristics and selected large-value payment systems.

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*Settlement is final as of the time the relevant settlement banks undertake an irrevocable contractual commitment to make payment.

Many of these payment systems still benefit from finality, even though the settlement asset is commercial bank funds.

**Finality and Commercial Bank Money**

Finality occurs through the use of commercial bank money in numerous payment systems. These payments enjoy the same kind of finality as do central bank funds, except in the case of legal rules that provide ultimate settlement, as discussed below.

The most common clearing and settlement using commercial bank funds is through commercial bank book-entry transfers such as “on us” transfers or correspondent banking. CLS clears huge volumes of foreign currency trades through its account system. Millions of dollars of derivatives payments are cleared each day through clearinghouses for exchange-traded derivatives such as futures and options and through over-the-counter derivatives (done typically through commercial bank book-entry transactions). Internalized payment, custodial, and related transactions, such as tri-party repo transactions, also involve large sums and may benefit from the ability of commercial banks to internally coordinate all relevant aspects of the transaction.
The Advantages of Central Bank Funds: Ultimate Settlement

The case for using central bank funds is often justified based on what is referred to as “ultimate settlement” enjoyed by central bank funds in certain payment systems. The CPSS states that “[t]he term ‘ultimate settlement’… combines the concept of settlement being final with the concept of the settlement asset being the least risky possible.”

Jurisdictions have sometimes provided ultimate settlement to central bank funds through special legal rules. In some jurisdictions, payments made in central bank funds are not subject to preference payment or clawback rules, providing additional assurances that a payment cannot be unwound after the payment is completed.

It is important to understand, however, that similar finality could just as easily be given to commercial bank funds by a legislature. This has been done in the United States with respect to protecting transactions entered into through a bilateral netting contract. A bankruptcy or insolvency system could also be reformed to eliminate preference payments and clawbacks for payments made in commercial bank funds. Some of this has already been done with respect to essentially eliminating the application of preference payment to swap payments under the U.S. Bankruptcy Code.

Weighing the Costs of Central Bank Funds

Although ultimate settlement through central bank funds has certain advantages, there are costs associated with the external processing of payments through central accounts. These costs often are not highlighted. For example, it may be more efficient or less costly to clear certain types of transactions using commercial bank versus central bank funds. Unless one factors in these other costs, one cannot measure the true benefits of expanding the role of central banks.

Conclusion: The Role of the Central Bank

There are many considerations that should be taken into account before expanding the role of central bank funds in settlement and
clearing of payment obligations. For example, using central bank funds requires a high degree of centralization. All payments would need to be cleared through a central authority, risking operational resiliency in the event there was a failure at the central bank level.

Using central bank money would also greatly expand the role of the central bank in a jurisdiction’s payment system and economy. This could result in the disintermediation of private-sector banks and the weakening of the commercial banking sector of that jurisdiction.

Using central bank funds also introduces moral hazard issues. There is some concern that having access to central bank money may in turn provide “semi-automatic access to emergency liquidity from the central bank.”

Finally, and perhaps most importantly, ultimate settlement may not be important for many participants in the market. For all but the very largest or most systemically important transactions, participants may value the convenience, flexibility, speed, and industry knowledge that commercial banks can provide over the somewhat theoretical benefits provided by ultimate settlement using central bank funds.

There clearly is a case to be made for using central bank funds in settling systemically important payments. For other payment transactions, however, the costs of settlement at the central bank may not be offset by the benefits of ultimate settlement.
Notes

Note: The views expressed herein are solely those of the authors and not necessarily those of the Federal Reserve Bank of Chicago or the Board of Governors of the Federal Reserve System.


3 See J. Lacker, supra note 2.

4 The Committee on Payment and Settlement Systems of the central banks of the Group of Ten countries (CPSS) defines payment system as: “a set of instruments, banking procedures and, typically, interbank funds transfer systems that ensure the circulation of money.” CPSS, Red Book on Payment and Settlement Systems in Selected Countries (Basel: Bank for International Settlements, 2003); see also CPSS, Core Principles for Systemically Important Payment Systems (Basel: Bank for International Settlements, January 2001)(technical infrastructure is one of the key elements of a typical payment system).

5 For a glossary of key terms relating to payment system design and operation, see CPSS, A Glossary of Terms Used in Payments and Settlement Systems (Basel: Bank for International Settlements, March 2003). For references to other materials relating to payment, clearing, and settlement systems, see C. Johnson and R. Steigerwald, “The Financial Services

6 The CPSS Red Book for the United States explains:

The Fedwire funds transfer system, owned and operated by the Federal Reserve Banks, is a real-time gross settlement system that enables participants to send and receive final payments in central bank money between each other and on behalf of customers. Fedwire processes and settles payment orders individually throughout the operating day. Payment to the receiving participant over Fedwire is final and irrevocable when the amount of the payment order is credited to the receiving participant’s account or when notice is sent to the receiving participant, whichever is earlier.

CPSS, Red Book (U.S.), supra note 4, at 443.

7 According to the CPSS Red Book for Canada:

LVTS is a real-time net settlement system that provides intraday finality for recipients. Each payment instruction is subject to real-time risk control tests. If the tests are passed, funds are made available to the recipient on an unconditional and irrevocable basis intraday. Each participant’s position is calculated in real time on a payment by payment basis.

CPSS, Red Book (Canada), supra note 4, at 37 and 44.

8 The Red Book states that LVTS uses “claims on the Bank of Canada to settle net payment obligations among those participants that participate directly in these systems.” Id. at 44. This statement refers to the net imbalances among participants’ multilateral positions at the end of the LVTS processing day:

At the end of the daily cycle, the participant’s … positions are merged and the final multilateral net positions are settled across settlement accounts at the Bank of Canada.
Continuous netting with intraday finality of payment, on the other hand, implies the settlement of payments without the use of any settlement asset. See CPSS, Core Principles, supra note 4, at 34 (payment “obligations . . . are not always settled by the transfer of a settlement asset; in some cases, an offsetting process can discharge obligations.”). Therefore it appears that settlement in LVTS takes place through a combination of netting without a settlement asset and settlement in central bank money for those payment instructions that are not discharged by offset. In that respect, the LVTS system is like the Clearinghouse Interbank Payment System (CHIPS) for U.S. dollar payments. CHIPS is discussed later in the chapter. See text accompanying note 25 infra.

This chapter uses the term money to refer only to credit money, which arises from a deposit relationship between an account holder and a bank (either a central bank or a commercial bank). Coins and currency are excluded from consideration because they are not commonly used in the settlement of large-value payment obligations. See, e.g., American Bar Association, Task Force on Stored-Value Cards, “A Commercial Lawyer’s Take on the Electronic Purse,” Business Lawyer, Vol. 52 (February 1997), at 653 (hereinafter the “Electronic Purse Report”). This usage is inconsistent with the definition of money contained in the Uniform Commercial Code (U.C.C.), the body of commercial law that is generally applicable to payments in the United States. See, e.g., J. Sommer, “A Law of Financial Accounts, Modern Payment and Securities Transfer Law,” The Business Lawyer, Vol. 53, No. 2 (1998), at 1181, 1193, note 61.

For example, the Federal Reserve Banks own and operate Fedwire. CPSS, Red Book (U.S.), supra note 4, at 443. The Bank of Canada, by contrast, “does not own or operate any payment or other clearing and settlement systems.” CPSS, Red Book (Canada), supra note 4, at 44. More importantly, as noted above, Fedwire is not a netting system. Settlement in Fedwire takes place by means of a credit transfer at a Federal Reserve Bank, not by offset or by a combination of offset and credit transfers, as in LVTS.

See, e.g., Lacker, supra note 2, at 2 (central bank payment system characterized as a communications “network in which many paths connect through a central node.”); see also, K. Soramäki et al., “The Typology of Interbank Payment Flows,” Federal Reserve Bank of New York, Staff Report No. 243 (March 2003) at 1 (“the payment system can be treated as a specific example of a complex network.”).
TARGET-2 is the real-time gross settlement system for euro-denominated payments. The European Central Bank (ECB) has summarized the motivation for the TARGET-2 Securities initiative as follows:

Conscious of the need for further integration in market infrastructures, and extracting the benefits from the implementation of the TARGET2 payment system, the Eurosystem is evaluating opportunities to provide efficient settlement services for securities transactions in central bank money, leading to the processing of both securities and cash settlements on a single platform through common procedures.

European Central Bank, Press Release, “The Eurosystem is evaluating opportunities to provide settlement services for securities transactions” (July 7, 2006); see also European Central Bank web site at www.ecb.int/paym/t2s/html/index.en.html

The term “ultimate settlement” is sometimes used to denote final settlement in central bank money [reference deleted]. As such, the term combines two distinct concepts—finality and the nature of the settlement asset used to achieve finality in payment systems.

Id. at 14, box 2.

There has, of course, been considerable variation in the functions central banks have performed over the nearly 350-year history of the central bank. This has lead some commentators to conclude that “we recognize [a central bank] when we see it.” F. Capie et al., eds., The Future of Central Banking, The Tercentenary Symposium of the Bank of England (Cambridge: Cambridge University Press, 1994), at 5. See also Green and Todd, supra note 1 (listing common functions of a central bank).

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17 Green and Todd, supra note 1, at 5 (central banks function “as the trustworthy and neutral apex of a hierarchy of banks that, in turn, provide the nonbank public with accounts used to settle financial, business and personal payments by transfer of balances.”); see also H. Blommestein and B. Summers, “Banking and the Payment System,” in B. Summers, ed., The Payment System: Design, Management and Supervision (Washington, D.C.: International Monetary Fund, 1994), at 27 (describing the payment system as an “inverted pyramid”):

At the top of the inverted pyramid is the broad base of economic actors whose daily activity in the market economy gives rise to payment obligations. This base consists of individuals who use retail payment services provided by banks, and a variety of business enterprises…. The next level includes very specialized firms, such as brokers and dealers, … which also rely on bank payment services.

18 Green and Todd, supra note 1, at 5 (emphasis added).

19 Id. (emphasis added).

20 J. Lacker, supra note 2, at 2. Lacker notes that “[t]he economic function of a payment instrument is to communicate [information about past transactions] reliably.” And, he points out:

The central role of communications technologies in payment arrangements points . . . to the importance of economies of scale, common costs and joint production. These conditions can give rise to ‘network effects’ in which much of the benefits and costs are shared among multiple participants.

Id. (emphasis added).

21 Id. (“central banks have more or less nationalized the clearinghouses at the ‘apex’ of the payment system.”)
22 Lacker notes that there is a range of views regarding whether the transition to central banking from earlier networks of private-sector institutions (i.e., clearinghouses) enhanced efficiency. *Id.*

23 Millard and Saporta, *supra* note 1, at 2. (Emphasis added)

24 See, e.g., K. Soramäki et al., “The Typology of Interbank Payment Flows,” Federal Reserve Bank of New York, Staff Report No. 243 (March 2003). As Soramäki and his co-authors point out, “the payment system can be treated as a specific example of a complex network.” *Id.* at 1.


27 For the reasons explained above (*see supra* note 8), the Canadian LVTS probably should be considered a private-sector network because settlements conducted through LVTS on the basis of offset do not involve the use of a settlement asset. To be sure, LVTS is supported by the Bank of Canada in a variety of ways, not least of which involves the use of central bank money for purposes of the end-of-day settlement of payment instructions that are not discharged by offset within LVTS. However, LVTS does not differ from CHIPS in that respect.

28 Soramäki et al., *supra* note. 23, at 1 (referring to private sector payment systems as “ancillary networks”).

29 CHIPS is a private-sector network in which payment instructions are offset on a continuous net basis, with intraday finality of settlement:

Since January 2001, CHIPS has been a real-time final settlement system that continuously matches, nets and settles payment orders. On a daily basis, the new system provides real-time finality for all payment orders released by CHIPS from the CHIPS queue. To achieve real-time finality, payment orders are settled on the books of CHIPS.
against positive positions, simultaneously offset by incoming payment orders, or both.

CHIPS is not a bank, does not take deposits, and does not create a settlement asset in the form of credit money. Settlement in CHIPS takes place, as it does in the Canadian LVTS, through a combination of netting without a settlement asset and settlement in central bank money for those payment instructions that are not discharged by offset. See supra, note 7.

CLS Bank International (CLS Bank) is an Edge corporation formed under U.S. law that functions as a bank, with the power to take deposits and create credit money. Settlement of foreign currency transactions through CLS takes place on the books of CLS Bank in commercial bank money—a fact that is often misunderstood because the CLS funding process involves transfers of central bank money through the national payment system for each currency cleared by CLS (although, as noted, Canadian dollar settlements through LVTS remain anomalous from this point of view, though not from a risk management perspective). The 2003 CPSS report Role of Central Bank Money clarifies this point:

CLS Bank, a private utility which meets the international norms for risk management laid out by the G10 Governors, is the settlement institution for CLS—i.e. settlement is not in central bank money. However, all payments to and from CLS are made through the issuing central bank, so central bank money retains a necessary role, pivotal but not central, in the settlement of foreign exchange transactions in CLS.

CPSS, The Role of Central Bank Money in Payment Systems, supra note 13 at 3.

The CPSS Glossary of Terms defines correspondent banking as “an arrangement under which one bank ([the] correspondent) holds deposits owned by other banks ([the] respondents) and provides payment … services to those respondent banks.” CPSS, Glossary of Terms, supra note 5.

The legal meaning of discharge is defined later in this chapter for purposes of interbank payment obligations. See text accompanying note 33.
33 Consistent with the terminology employed in the CPSS report *Role of Central Bank Money*, this chapter refers to central bank and commercial bank monies, respectively. CPSS, *The Role of Central Bank Money in Payment Systems*, supra note 13 at 13.


35 CPSS, *A Glossary of Terms*, supra note 5. Discharge is defined as: “release from a legal obligation imposed by contract or law.”


38 *Id.* at 14.


41 Mann, *supra* note 38, at 643.

42 New York Uniform Commercial Code § 4-403(1); see also 9 N.Y. Jur. 2d Banks § 382 (discussion of stop payment rights). We refer here to New York law, which governs many of the most important payments transactions in the United States. The Uniform Commercial Code (U.C.C.) is drafted by the National Conference of Commissioners on Uniform State Laws. The work of the conference is intended to promote the consistency of commercial law from state to state and, thereby, to promote legal certainty within a federal system of law. See, http://www.nccusl.org/Update/


44 New York Uniform Commercial Code, Article 4A.


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46 See CHIPS Rules and Administrative Procedures (Sept. 2006), Rule 3.


50 For a discussion of TARGET, see CPSS, Red Book (Euro Area), supra note 4


52 Through its clearinghouse, the Chicago Mercantile Exchange (CME) cleared over US$13.8 million exchange-traded futures and options contracts on February 27, 2007. See www.cme.org. The money settlements associated with those trades are conducted through a network of so-called “settlement banks” which carry accounts for the CME clearinghouse and its clearing members.


54 12 USC §§ 4401–4407. Under a bilateral netting contract, the parties net the termination values of the various transactions governed by the contract upon termination of these transactions.

55 11 USC § 546(g) (preference payments) and §548(d)(2) (fraudulent transfer).

56 CPSS, The Role of Central Bank Money in Payment Systems, supra note 13, at 15.