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Legal and Policy Aspects of the Central Bank's Role in the Payment System: Some Costs and Benefits of the Choice of Settlement Asset

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Introduction

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.[1] In particular, central banks have long performed the function of ". . . providing banks with deposits and a means of transferring them to make interbank payments,"[2] a function Jeffrey Lacker, President of the Federal

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1 See, e.g., Millard, S. and V. Saporta, "Central banks and payment systems: Past, present and future," Background Paper, Bank of England Conference on "The Future of Payments" (London, May 2005) at 2; Green, E., and R. Todd, "Thoughts on the Fed's Role in the Payments System," *Federal Reserve Bank of Minneapolis Quarterly Review*, Vol. 25, No. 1 (Winter 2001) at 12, et seq.; see also, McAndrews, J. and W. Roberds, "Payment Intermediation and the Origins of Banking," Federal Reserve Bank of New York, Staff Report No. 95 (Sept. 1999)(examining the important role banks have historically played as payments intermediaries).

2 Lacker, J., "Central Bank Credit in the Theory of Money and Payments," Remarks at the Economics of Payments II Conference, Federal Reserve Bank of New York (New York, March 29, 2006) at 2-3 (citing Quinn & Roberds, infra); see also, Quinn, S. and W. Roberds, The Big

Reserve Bank of Richmond, has called ". . . the fundamental core of central banking. . . ."[3] Of course, payment systems, as the discussion in this paper will indicate, have specific legal, technical, operational and other institutional characteristics, which may differ from time-to-time (reflecting technological and other developments), country-to-country (principally reflecting legal, regulatory and policy considerations) and system-to-system (reflecting the needs of payment system users and others).[4] As a result, the precise function central banks, as opposed to commercial banks, perform in the payment system may vary considerably depending upon the institutional characteristics of the payment system.

Some payment systems, such as the Fedwire® Funds Transfer system 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.[5] Each payment is settled individually by means of a credit

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Problem of Large Bills: The Bank of Amsterdam and the Origins of Central Banking," Federal Reserve Bank of Atlanta, Working Paper No. 2005-16 (August 2005).

[3] Id.

[4] The Committee on Payment and Settlement Systems of the central banks of the Group of Ten countries ("CPSS") defines a "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, April 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 Johnson, C. and R. Steigerwald, "The Financial Services Lawyer's Bookshelf: A Selected

transfer at a Federal Reserve Bank.[6] The Canadian Large Value Transfer System ("LVTS"), by contrast, is a net settlement system, or more precisely, a "continuous net settlement" (or "CNS") system,[7] rather than an RTGS. LVTS utilizes "real-time net processing," in which the 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.[8] Both Fedwire and

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Bibliography Of Payment, Clearing And Settlement Resources," *The Journal of Payment System Law* (October 2006).

[6] The CPSS *Red Book* for the United States explains that:

> "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 n. 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 n.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."

Id. at 55. 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 for Systemically Important Payment Systems*, supra n. 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

LVTS result in effective and final transfers of credit money between account holders.[9] 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.[10] We will discuss only one of those differences in this paper.

Because a payment system may be characterized as a specialized communications network,[11] we can use concepts and terminology drawn from complex network analysis to better understand the relationships among the many parts of the system. In particular, we can use the terminology of complex network analysis to describe the respective roles of public and private sector

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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. We discuss CHIPS later in this paper. See infra at text accompanying n. 23.

[9] We use the term money in this paper 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 ("ABA"), Task Force on Stored-Value Cards, "A Commercial Lawyer's Take on the Electronic Purse," *Business Lawyer,* Vol. 52, 653 (February 1997)(the "Electronic Purse Report"). We recognize that 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 U.S. See, e.g., Sommer, J., "A Law of Financial Accounts, Modern Payment and Securities Transfer Law," *The Business Lawyer,* Vol. 53, No. 2 (1998) 1181, 1193, at n. 61.

[10] For example, the Federal Reserve Banks own and operate Fedwire. CPSS, *Red Book* (U.S.), supra n. 4, at 443. The Bank of Canada, on the other hand, ". . . does not own or operate any payment or other clearing and settlement systems. . . ." CPSS, *Red Book* (Canada), supra n. 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.

[11] See, e.g., Lacker, supra n. 2, at 2 (central bank payment system characterized as a communications ". . . network[] in which many paths connect through a central node."); Soramäki, K., 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.").

banks in the payment system. Using that terminology, we propose 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.

We start with a brief overview of the payment system and the roles central banks have traditionally played in their capacity as payment intermediaries. In particular, we discuss interbank settlement and the role of bank money as a settlement asset. We show that the concept of settlement finality, which has both legal and risk management dimensions, is a key attribute of any form of payment and is not a unique attribute of payments made through a central bank.

We then consider whether the central bank has a comparative advantage with respect to private sector banks in its role as a payments intermediary. In particular, we consider the respective costs and benefits of emphasizing the central bank as the provider of a settlement asset and identify certain policy trade-offs relating to that role. We conclude that there is an inherent tension between those public policy objectives that are served by maximizing the use of credit money emitted by the central bank (so-called “central bank money”) as a settlement asset and those that are better served by maximizing the ability of transactors to choose from alternative settlement assets (either central bank money or a variety of commercial bank monies).

This analysis is, we think, timely given recent payment system and related developments, particularly in the Eurozone.[12] 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."[13] 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." We intend this brief paper 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.

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[12] The European Central Bank ("ECB") has summarized the need 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."

http://www.ecb.int/paym/market/secmar/integr/html/index.en.html (February 28, 2007); see also, European Central Bank, *Target 2 Securities* (2006); Godeffroy, J., ""Ten Frequently Asked Questions about TARGET2-SECURITIES," Speech at the British Bankers Association (London, September 20, 2006).

[13] See, e.g., CPSS, *The Role of Central Bank Money in Payment Systems* (Basel: Bank for International Settlements, August 2003). According to the CPSS,

> "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.

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 brief paper. Instead, this paper is simply an introduction for central bank legal counsel to one set of legal and policy considerations relating to the role of the central bank in the interbank payment system, based upon the authors' presentation at the International Monetary Fund's *Seminar on Current Developments in Monetary and Financial Law* in October 2006.

Discussion

The Role of the Central Bank in the Payment System

Whatever else central banks may do – and the list of functions commonly performed by central banks is long – they almost always play a foundational role in the payment system.[14] Indeed, Stephen Millard and Victoria Saporta, in their background paper to the Bank of England's May 2005 Conference on "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*."[15]

[14] Millard & Saporta, supra n. 1, at 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." Capie, F. et al. (eds.), *The Future of Central Banking, The Tercentenary Symposium of the Bank of England* (Cambridge: Cambridge U. Press, 1994) at 5. See also, Green & Todd, supra n. 1 (listing common functions of a central bank).

[15] Millard & Saporta, supra n. 1, at 2 (emphasis added).

For purposes of this paper, we are 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;[16] and (2) the provision of credit money, commonly called "central bank money," as a settlement asset for interbank transactions. Before we turn to a discussion of some costs and benefits associated with the use of "central bank money" as a settlement asset, we need to understand these components.

In a 2001 article on the Federal Reserve's role in the payment system, Ed Green and Dick 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

[16] Green & Todd, supra n. 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, Blommestein, H., 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."

Id.

> 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.*[17]

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."[18] 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."[19] 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."[20]

There is much here that deserves close attention. For present purposes, however, we focus upon the explanation Lacker gives, based upon the efficiency of centralized communications networks, for the development of the hierarchical

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[17] Green & Todd, supra n. 1, at 5 (emphasis added).

[18] *Id.* (emphasis added).

[19] J. Lacker, supra n. 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 that:

> "[t]he 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).

[20] *Id.,* (". . . central banks have more or less nationalized the clearinghouses at the 'apex' of the payment system.")

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.[21]

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."[22]

This description connects the two components of what we have identified as the role of the central bank 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 sector in nature) at the apex. Millard and Saporta connect that structural position to the role played by a settlement

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[21] 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.*

[22] Millard, S. and V. Saporta, supra note 1, at 2.

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.

Central banks, in their role as payment intermediaries, 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 that is described as a "star" (the interbank payment system).[23] The Fedwire funds transfer system is an example of a payment system in which the central bank functions as a network hub. There are also private sector interbank payment networks, such as the Clearinghouse Interbank Payment System ("CHIPS") for U.S. dollar payments[24] and the Continuous Linked Settlement ("CLS")[25] system for foreign currency settlements. And banks have historically maintained so-called "correspondent" relationships which they use to transfer money on a bilateral basis, without the intermediation of a hub (either private or public sector). Although these arrangements are probably less important today than the network alternatives, they still exist and still serve their original function.

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[23] See, e.g., Soramäki, K., 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.

[24] See, e.g., CPSS, *Red Book* (U.S.), supra n. 4, at 444; information available online at CHIPS: http://www.chips.org/home.php .

[25] See, e.g., CPSS, *Red Book* (International Payment Arrangements), supra n. 4, at 462 et seq.; Galati, G., Settlement Risk in Foreign Exchange Markets and CLS Bank, *BIS Quarterly Review* (December 2002); information available online at CLS Group: http://www.cls-group.com/.

Based upon this description, we can develop a simple typology of institutional arrangements for the settlement of interbank payment obligations in credit money. 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; [26] or (2) "private sector networks," [27] such as CHIPS[28] and CLS,[29] where the network hub, if there is one, is provided

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[26] For the reasons explained above, see, supra n. 8, the Canadian LVTS probably should be considered as 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.

[27] Soramäki, et al., supra n. 23, at 1 (referring to private sector payment systems as "ancillary networks").

[28] 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, n. 7.

[29] CLS Bank International ("CLS Bank") is an Edge Corporation formed under U.S. law which 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 on the *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."

by a private sector institution (either a bank or a bank service provider) and the settlement asset, if there is one, is provided by a commercial bank; or (3) through direct bank-to-bank correspondent arrangements, in which there is no network and the settlement asset is provided by commercial banks (through the management of "nostro" and "vostro" accounts for each other).[30]

Based upon this simple typology, we can draw the following conclusions:

- Payment obligations can be discharged without the use of a settlement asset (as in net settlement systems, such as CHIPS and LVTS);[31] and
- Both commercial banks and central banks take deposits and create credit money (called "central bank money" and "commercial bank money," respectively)[32] 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).

Users of the payment system, therefore, have a choice whether to transmit payments through a system in which the central bank functions as a hub (and settlement is in central bank funds) or through some other mechanism. In the

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

[30] 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 n. 5.

[31] We discuss below the legal meaning of "discharge" for purposes of interbank payment obligations. See text accompanying n. 33.

[32] Consistent with the terminology employed in the CPSS report on the *Role of Central Bank Money*, we refer herein to "central bank" and "commercial bank monies," respectively. CPSS, *The Role of Central Bank Money in Payment Systems,* 13.

next section of this article, we expand our explanation of the choice of settlement asset and attempt to clarify 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 different ways. Each has its own unique characteristics, benefits and disadvantages. The CPSS Red Book summarized 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."[33]

A settlement asset is generally defined as "[A]n asset used for the discharge of settlement obligations as specified by the rules, regulations or customary practice for a payment system."[34]

The two major settlement assets could be summarized as cash (i.e. specie and paper currency) or credit money. Cash is the oldest and probably best understood settlement asset. For thousands of years, specie in the form of gold, silver and other precious metals, and paper currency, was used to meet payment

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[33] CPSS, *Red Book,* supra n. 4, at 439.

[34] CPSS, *A Glossary of Terms Used in Payments and Settlement Systems*, supra n. 5. Discharge, is defined as: "release from a legal obligation imposed by contract or law." *Id.*

obligations. Settling payment obligations through cash is particularly useful for small purchases and payment obligations that are done in routine face to face transactions. However, in our modern society, cash is logistically difficult to use with respect to 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 $200 million acquisition with federal reserve notes."[35]

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 in the form of a demand deposit or similar account, large

[35] ABA, Electronic Purse Report, supra n. 9, at 668.

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 funds as being riskless due to safety and liquidity advantages that these funds enjoy over commercial bank funds. Central bank funds are often thought to be safe because they are considered to be "more creditworthy institutions than commercial banks in their own currency" and because they have "explicit state support".[36] 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."[37]

The following is a representation of the Interbank Payment system that results in the creation of credit money:

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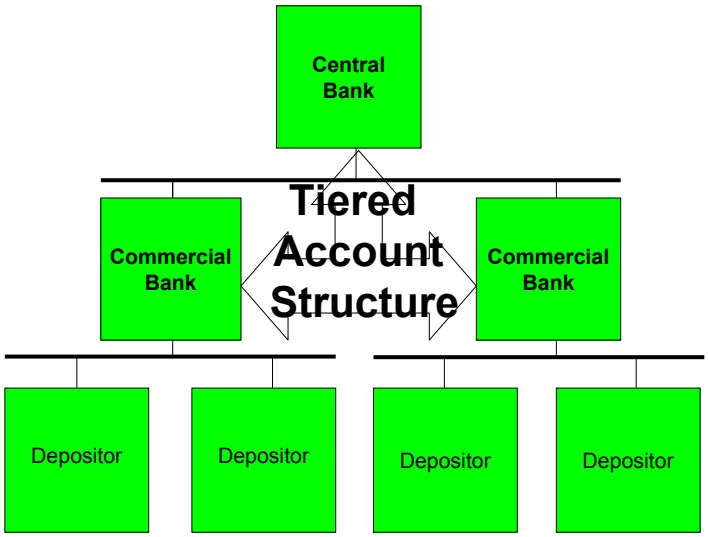
[36] CPSS, *The Role of Central Bank Money in Payment Systems,* supra n. 13 at 13.

[37] *Id.* at 14.

Interbank Payment System



Finality

One of the principal claims of 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 finality advantages 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 outside of his hotel using cash, finality exists:

> "[I]f a consumer pays with cash, the 'payment' is final at that moment, in the sense that the consumer cannot recover the cash."[38]

What is typically meant by finality is that the recipient of the settlement asset has immediate use of the funds, doesn't 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."[39]

Just because the transaction has finality, however, doesn't mean that the individual does not have a claim against the newspaper vender however. Ron Mann summarized 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."[40]

The payment was final between the purchaser and the newspaper vender when the purchaser turned over the cash, meaning that the vender 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 vender, regardless of how "final" payment was.

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[38] Mann, Ronald J., "Making Sense of Payments Policy in the Information Age," Georgetown Law Journal, Vol. 93, p. 633, 2005, available at SSRN: http://ssrn.com/abstract=507822

[39] CPSS, *The Role of Central Bank Money in Payment Systems,* supra, n. 12, at 14.

[40] Mann, supra n. 38, at 643.

Finality is important because it minimizes systemic risk. Finality 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. It 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.

Finality of payment can best 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.[41] This effectively places the recipient of the check at risk until the check has cleared the payor's bank

[41] N.Y.U.C.C. § 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.

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 on a real time basis 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 Committee on Payment and Settlement Systems 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."[42] 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
- 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.

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[42] CPSS, *The Role of Central Bank Money in Payment Systems*, supra n. 13, at 14.

For example, finality for checks and funds transfers is governed in the United States by each state's uniform commercial code. Finality for Fedwire is determined by Article 4A of the UCC[43] and Regulation J[44] promulgated by the Federal Reserve. Finality for CHIPS is a function of both contract law and applicable statutory law.[45] For TARGET, finality is governed by the Settlement Finality Directive[46] 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.[47]

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."[48]

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43 New York Uniform Commercial Code Article 4A.

44 12 C.F.R. Part 210.

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

46 Settlement Finality Directive 98/26/EC (EU 25). For a discussion of the directive, see Commission of the European Communities, Report from the Commission-Evaluation Report on the Settlement Finality Directive 98/26/EC (EU 25), 27 March 2006, available at http://ec.europa.eu/internal_market/financial-markets/docs/settlement/evaluation_report_en.pdf (Feb. 28, 2007).

47 Canadian Payments Act (R.S., 1985, c. C-21), available at: http://laws.justice.gc.ca/en/showtdm/cs/C-21.

48 CPSS, *The Role of Central Bank Money in Payment Systems*, supra n. 13, at 14.

Finality Through Interbank Payment Systems

This section will discuss achieving finality through interbank systems and will discuss briefly the costs and benefits of clearing and settling through central bank funds versus commercial bank funds. We conclude that 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 either by settling through a central bank in central bank funds, through commercial banks 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 would include Fedwire, CHIPS, LTVS (Canada), TARGET (Eurozone),[49] and CLS. Each of payment system can be characterized by several different characteristics:

- Ownership or Operation
  - Public or private
- Operational Considerations
  - Gross, Net or Hybrid
- Settlement through

[49] For a discussion of TARGET, see CPSS, *Red Book* (Euro Area), supra n. 4, available at: http://www.bis.org/publ/cpss53p04eu.pdf

- Central Bank Money or
- Commercial Bank Money

• Finality (the one constant)

- All provide for legal finality

The following chart provides a summary of these characteristics and selected large-value payment systems:

CHARACTERISTICS / **LARGE-VALUE SYSTEMS (SELECTED)**	**Ownership/ Operation** — **Operational and Data Processing Environment**	**Form of Settlement Asset**	**Intraday Finality (or Provisionality) of Settlement**
United States			
Fedwire Funds Transfer System	Federal Reserve Banks Real-Time Gross Settlement (RTGS)	Central bank money	Final settlement
Clearinghouse Interbank Payment System (CHIPS)	CHIPCo. (New York Clearinghouse Association) Continuous (Real-Time) Net Settlement (Hybrid)	(1) Netting: N/A (2) Residual settlement in central bank money	Final settlement
Canada			
Large-Value Transfer System (LVTS)	Canadian Payments Association Continuous (Real-Time) Net Settlement (Hybrid)	(1) Netting: N/A (2) Residual settlement in central bank money	Final settlement

CHARACTERISTICS / LARGE-VALUE SYSTEMS (SELECTED)	Ownership/ Operation Operational and Data Processing Environment	Form of Settlement Asset	Intraday Finality (or Provisionality) of Settlement
Eurozone			
TARGET	European Central Bank/ESCBs Real-Time Gross Settlement (RTGS)	Central bank money	Final settlement
Other			
CLS (Continuous Linked Settlement)	CLS Shareholders (Major International Banks, etc.)		
	(1) Real-Time Gross Settlement (RTGS)	(1) Commercial bank money	Final settlement
	(2) Designated Net Settlement (DNS)	(2) Central bank money	Final settlement
Derivatives Settlement Arrangements (U.S.)	N/A	(1) Commercial bank money	Final settlement*
	(1) Book Transfer	(2) Central bank money	Final settlement
	(2) Interbank Wire Transfer (via Fedwire and/or CHIPS)	(3) Other assets (e.g., IEF)	Final settlement
SUMMARY	Various Forms of Ownership/Operation; Various Operational and Data Processing Environments	Central bank or commercial bank money; netting; other assets	Final settlement

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

As noted in the chart, 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 different 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 will be 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.[50] 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).[51] "Internalized" payment, custodial and related transactions are also in large volumes in situations such as triparty repo transactions.[52]

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[50] On January 16, 2007, "CLS Bank settled 705,582 payment instructions with a gross value of US$ 5.22 trillion." www.cls-group.com (Feb. 28, 2007).

[51] Through its clearinghouse, the Chicago Mercantile Exchanged cleared over 13.8 million of exchange traded futures and options contracts on February 27, 2007. See www.cme.org.

[52] For a discussion of Tri-party custodial agreements in the repo area, See Paul Harding and Christian Johnson, *A Practical Guide to Using Repo Master Agreements,* (Euromoney 2004), at 262-307.

The Advantages of Central Bank Funds: Ultimate Settlement

The case for using central banks funds is often justified based on what is referred as "ultimate settlement" enjoyed by central bank funds in certain payment systems. "The term 'ultimate settlement' . . . combines the concept of settlement being final with the concept of the settlement asset being the least risky possible."[53]

Jurisdictions have sometimes provided ultimate settlement to central bank funds through special legal rules. For example, in some jurisdictions, payments made in central bank funds are not subject to preference payment or claw back 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. For example, statutes could provide the same finality to a type of transaction that is cleared and settled in commercial bank funds. This is what has been done in the United States with respect to protecting transactions entered into through a bilateral netting contract.[54] 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

[53] CPSS, *The Role of Central Bank Money in Payment Systems,* supra n. 13, at 14.

[54] 12 USC §§4401-4407.

eliminating the application of preference payment to swap payments under the U.S. Bankruptcy Code.[55]

Weighing the Costs of Central Bank Funds

Although participants can point to the advantages of ultimate settlement through using central bank funds, there are clearly other costs of using central bank funds over commercial bank funds that often are not highlighted. Unless one factors in these other costs, one cannot measure the trust benefits of expanding the role of central banks.

There are a wide variety of 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 a jurisdiction.

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

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."[56]

Finally and perhaps most importantly, ultimate settlement may not be important for many participants in the market. For all but the very largest 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.

Conclusion

There is clearly a case to be made and a place for using central bank funds in clearing and settlement of payment obligations. The settling of particularly large payment obligations may dictate or even require the benefits of ultimate settlement. However, there is no right answer for structuring payment systems involving the use of central bank money versus commercial bank money based upon a comparison of the costs and benefits. The optimal payment systems will take into account the costs and benefits of using central bank money versus commercial bank money, and rely upon one or the other depending upon the risks involved in the particular transaction.

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[56] CPSS, *The Role of Central Bank Money in Payment Systems,* supra n. 13, at 15.

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