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Report to Congressional Requester

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PAYMENT SYSTEMS

Central Bank Roles Vary, but Goals Are the Same

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Accountability * Integrity * Reliability

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Contents

Abbreviations

ACH	automated clearinghouse
CHAPS	Clearing House Automated Payment System
CHIPCo	Clearing House Interbank Payments Company LLC
CHIPS	Clearinghouse Interbank Payments System
CPSS	Committee on Payment and Settlement Systems
ECB	European Central Bank
LVTS	Large Value Transfer System
MCA	Monetary Control Act
NYCHA	New York Clearing House Association LLC
RTGS	real-time gross settlement
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer

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Accountability * Integrity * Reliability

United States General Accounting Office
Washington, D.C. 20548

February 25, 2002

The Honorable Carolyn B. Maloney
Ranking Minority Member, Subcommittee on Domestic Monetary
Policy, Technology, and Economic Growth
Committee on Financial Services
House of Representatives

Dear Ms. Maloney:

This report responds to your request that we study the roles of central banks in payment systems to provide perspective on the roles played by the Federal Reserve System[1] in the United States' payment system. Payment systems play an important role in the financial and economic health of nations. The smooth functioning of payment systems that handle very high-value, institution-to-institution payments—or wholesale payment systems—is important in ensuring the stability of financial markets and systems. Well-functioning payment systems that handle the low-value payments that constitute the bulk of payment transactions—or retail payment systems—are important in helping to maintain public confidence in financial systems. The degree to which a central bank should be involved in the payment system has been the subject of controversy. Views on this issue have evolved over time and therefore are likely to remain open to debate.[2]

We discuss the involvement of foreign central banks in their payment systems to provide perspective on the roles and functions of the Federal Reserve System in the U.S. payment system. We describe the roles of the Federal Reserve System in the Background section of this report. Although unique country characteristics make it difficult to conduct direct comparisons of the roles that central banks play in payment systems difficult, we reviewed these roles to illustrate the factors that influence the involvement of central banks in payment systems. The objectives of this

[1]The Federal Reserve System comprises the Board of Governors and the Federal Reserve Banks. The Federal Reserve Banks own and operate the wholesale and retail payment systems offered by the Federal Reserve System, while the Board of Governors provides oversight of these operations and serves as the regulator where they possess such authority. In this report, we use the term "Federal Reserve System" generically to refer to either entity.

[2]U.S. General Accounting Office, *Federal Reserve System: Mandated Report on Potential Conflicts of Interest*, GAO-01-160 (Washington, D.C.: Nov. 13, 2000).

report are to (1) identify internationally recognized objectives for payment systems and central bank involvement in those systems, (2) describe the roles of central banks in the wholesale payment systems of other major industrialized countries and the key factors that influence those roles, and (3) describe the roles of central banks in the retail payment systems of other major industrialized countries and the key factors that influence those roles.

We reviewed literature provided by central banks and central bank organizations, foreign law commentaries, central bank Web sites, and academic studies. Our information on foreign laws is based on secondary sources and does not reflect our independent legal analysis. We also interviewed Federal Reserve System officials, members of trade associations, and academics. In analyzing the roles of other central banks in payment systems, we focused on countries with relatively modern, industrialized economies.[3] Appendix I presents a detailed discussion of the scope and methodology of our work.

Results in Brief

The primary objective of all central banks is to ensure the smooth functioning of their countries' payment systems. Although their specific roles may vary slightly, the central banks of major industrialized countries have agreed on this and other common policy objectives and presented them in the *Core Principles for Systemically Important Payment Systems* (*Core Principles*).[4] Intended to help promote safer and more efficient

[3]For this report, we focused on Australia, Canada, France, Germany, Japan, the United Kingdom, and the United States.

[4]The *Core Principles* was developed by the Committee on Payment and Settlement Systems (CPSS) of the G-10 Central Bank Governors. The secretariat for this committee is provided by the Bank for International Settlements. The CPSS established the Task Force on Payment System Principles and Practices in May 1998 to consider what principles should govern the design and operation of payment systems in all countries. The task force sought to develop an international consensus on such principles. The task force included representatives (1) from major industrial nations' central banks and the European Central Bank, (2) from 11 other national central banks of countries in different stages of economic development from all over the world, and (3) from the International Monetary Fund and the World Bank. The task force also consulted groups of central banks in Africa, the Americas, Asia, the Pacific Rim, and Europe.

systemically important[5] payment systems worldwide, the *Core Principles* outlines specific policy recommendations for systemically important payment systems and describes responsibilities of central banks. The *Core Principles* is silent on the question of whether central banks should operate systemically important payment systems. However, many central banks believe that central bank operation of at least one large value funds transfer system in an economy is fundamental to financial stability. The *Core Principles* also recommends that central banks oversee all systemically important payment systems' compliance with the *Core Principles*, including private- and public-sector systems. While the laws[6] of the countries we studied give the central bank broad responsibility for ensuring that payment systems operate smoothly, some central banks are not specifically charged with providing payment clearing services,[7] and some do not have explicit authority to regulate payment systems.

All of the central banks we studied seek to ensure that their wholesale payment systems operate smoothly and minimize systemic risk. However, they pursue these goals in different ways that are influenced by various factors, such as the structure and history of the country's banking system. All of the central banks we studied provide settlement services for their countries' wholesale payment systems. In addition, some central banks that we reviewed provide wholesale clearing services. Other central banks have little operational involvement in clearing, but own the system, while others participated in partnerships with private-sector entities.

Among the countries we studied, the roles of central banks in clearing retail payments varied more than they did with wholesale systems. Nonetheless, central banks consider retail payments to be an important component of their payment systems; therefore, central banks have some

[5]A payment system is systemically important where, if the system were not sufficiently protected against risk, disruption within it could trigger or transmit further disruptions among participants or systemic disruptions in the financial area more widely.

[6]Our discussion of the laws of other nations is based on secondary sources rather than our original legal analysis.

[7]Clearing refers to transmitting, reconciling, and, in some cases, confirming payment orders before settlement, possibly including the netting of instructions and the establishment of final positions for settlement. Settlement refers to the process of recording the debit and credit positions of two parties in a transfer of funds. We discussed these and other aspects of payment systems in the following: U.S. General Accounting Office, *Payments, Clearance, and Settlement: A Guide to the System, Risk, and Issues*, GAO/GGD-97-73 (Washington, D.C.: June 20, 1997).

responsibility in fostering the smooth functioning of retail payment systems. All of the central banks we studied provide settlement for some retail payment systems. Some, but not all, central banks exercise regulatory[8] authority over certain retail payment systems in their countries. The different roles played by central banks in retail payment systems reflect the influences of a variety of factors. For example, many European countries, such as Germany, the Netherlands, and Switzerland, have well-developed systems for credit transfers in which the central bank is not involved as a service provider. This reflects a history of payment networks established by postal organizations and other institutions like credit cooperatives, which provided financial services to the general population. Central banks also tend to have less operational involvement in countries where there is a relatively concentrated banking industry. In some countries, laws governing payments and the structure of the financial services industry direct the involvement of central banks in retail payment systems. Finally, central bank roles in retail payment systems reflect geographic and economic differences among countries.

Background

The Federal Reserve System is involved in many facets of wholesale and retail payment systems in the United States, including

- providing wire transfers of funds and securities;
- providing for the net settlement of check clearing arrangements, automated clearinghouse (ACH) networks, and other types of payment systems;
- clearing checks and ACH payments; and
- regulating certain financial institutions and overseeing certain payment systems.

Responding in part to a breakdown of the check-collection system in the early 1900s, Congress established the Federal Reserve System as an active participant in the payment system in 1913. The Federal Reserve Act directs

[8] We use the term "regulatory" to indicate the authority to issue and enforce specific regulations governing the payment system. In our previous report, GAO-01-160, we found no evidence to suggest that the Federal Reserve has not adequately separated its role as a provider of services and its roles as regulator, supervisor, and lender.

the Federal Reserve System to provide currency in the quantities demanded by the public and authorizes the Federal Reserve System to establish a nationwide check clearing system, which has resulted in the Federal Reserve System's becoming a major provider of check clearing services.

Congress modified the Federal Reserve System's role in the payment system through the Monetary Control Act of 1980 (MCA).[9] One purpose of the MCA is to promote an efficient nationwide payment system by encouraging competition between the Federal Reserve System and private-sector providers of payment services. The MCA requires the Federal Reserve System to charge fees for its payment services, which are to be set to recover, over the long run, all direct and indirect costs of providing the services. Before the MCA, the Federal Reserve System provided payment services to its member banks for no explicit charge. The MCA expanded access to Federal Reserve System services, allowing the Federal Reserve System to offer services to all depository institutions, not just member banks. Congress again expanded the role of the Federal Reserve in the payment system in 1987 when it enacted the Expedited Funds Availability Act.[10] This act expanded the Federal Reserve Board's authority to regulate certain aspects of check payments that are not processed by the Federal Reserve System.

Through specific regulatory authority and its general authority as the central bank, the Federal Reserve plays an important role in the oversight of the nation's payment systems. The Federal Reserve Board has outlined its policy regarding the oversight of private-sector clearance and settlement systems in its Policy Statement on Payment Systems Risk. The second part of this policy incorporates risk management principles for such systems.[11]

[9]Depository Institutions Deregulation and Monetary Control Act of 1980, Pub. L. No. 96-221 § 107.

[10]Pub. L. No. 100-86, Title VI, § 609 (2000).

[11]These standards are based on the Lamfalussy Minimum Standards, which are the forerunners of the *Core Principles*.

The Federal Reserve System competes with the private sector in providing wholesale payment services. Wholesale payment systems are designed to clear and settle time-critical and predominantly large-value payments.[12] The two major wholesale payment systems in the United States are the Fedwire funds transfer system, owned and operated by the Federal Reserve System, and the Clearing House Interbank Payments System (CHIPS), which is owned and operated by the Clearing House Service Company LLC, a subsidiary of the New York Clearing House Association LLC (NYCHA) for use by the participant owners of the Clearing House Interbank Payments Company LLC (CHIPCo). Fedwire is a real-time gross settlement (RTGS) system through which transactions are cleared and settled individually on a continuous basis throughout the day.[13] CHIPS began operations in 1970 as a replacement for paper-based payments clearing arrangements.[14] Since January 22, 2001, CHIPS has operated as a real-time settlement system.[15] Payment orders sent over CHIPS are either simultaneously debited/credited to participants' available balances or have been netted and set off with other payment orders and the resulting balance is debited/credited against participants' available balances throughout the day.[16] The transfer of balances into CHIPS and payments

[12]Although the wholesale payment systems of some countries handle securities transactions, we do not discuss securities settlement systems in this report.

[13]A daylight overdraft occurs when a depository institution's Federal Reserve account is in a negative position during the business day. In Fedwire, an institution that incurs an overdraft is charged a fee that is based on its average daily overdraft, and the size of the overdraft is limited according to a predetermined cap.

[14]Each of the 57 CHIPS members, primarily large money-center banks, has an ownership interest in CHIPCo, the company that owns and operates CHIPS. Management of CHIPCo is directed by the CHIPCo board, which is elected by the membership. The CHIPCo board sets strategy and makes key decisions.

[15]Before January 22, 2001, CHIPS operated as an end-of-day multilateral net settlement system.

[16]During the day, net settlement may be either bilateral (i.e., offsetting payment orders to and from two institutions) or multilateral (i.e., offsetting payment orders to and from all participants). Payment orders that remained queued until the end of the processing day are settled on a multilateral net basis.

out occur via Fedwire.[17] The Federal Reserve System oversees CHIPS' compliance with its Policy Statement on Payment Systems Risk.[18]

The size and aggregate levels of wholesale transactions necessitate timely and reliable settlement to avoid the risk that settlement failures would pose to the financial system. Although wholesale payments constitute less than 0.1 percent of the total number of transactions of noncash payments, they represent 80 percent of the total value of these payments. Moreover, in 1999, the value of payment flows through the two major wholesale systems in the United States, Fedwire and CHIPS, was approximately 69 times the U.S. gross domestic product in that year.

The Federal Reserve System also competes with the private sector in providing retail payment services. For example, the Federal Reserve System provides ACH and check clearing services. ACH systems are an important mechanism for high-volume, moderate to low-value, recurring payments, such as direct deposit of payrolls; automatic payment of utility, mortgage, or other bills; and other business- and government-related payments.[19] The Federal Reserve System also competes with private-sector providers of check clearing services. To do this, the Federal Reserve operates a nationwide check clearing service with 45 check processing sites located across the United States.[20]

The Federal Reserve System's market share of payment services as of year-end 1999 is represented in table 1.

[17]Since 1981, CHIPS has used an account at the Federal Reserve Bank of New York for settlement purposes.

[18]The Federal Reserve staff charged with administering the Policy Statement on Payments System Risk are separate from the staff providing payment services such as Fedwire.

[19]ACH payments can flow through one or multiple operators. Transactions processed within the Federal Reserve Banks' ACH network settle in the participants' Federal Reserve Bank accounts or in the Federal Reserve Bank account of a correspondent institution. Transactions that are cleared and processed within a private-sector operator's network generally settle on a net basis through the net settlement services provided by the Federal Reserve Banks. ACH transfers that flow over two or more networks must comply with the operational guidelines and fees of each network.

[20]As part of this nationwide service, the Federal Reserve Banks use private-sector couriers to transport checks between offices, see U.S. General Accounting Office, Check Relay: Controls in Place Comply With Federal Reserve Guidelines, GAO-02-19 (Washington, D.C.: Dec. 12, 2001).

Table 1: The Federal Reserve System's Market Share of Payment Services

Volume of transactions in millions

Payment system	Market share, by year				
	1995	1996	1997	1998	1999
Large-Value systems[a]					
Fedwire[b]	75.9	82.6	89.5	98.1	102.8
CHIPS[c]	51.0	53.5	59.0	59.1	57.3
Check clearing					
Federal Reserve System[d]	16,128.0	16,129.0	16,531.0	17,107.0	17,589.0
Private clearing houses and direct exchanges[e]	28,145.0	29,852.0	30,020.0	30,082.4	30,304.7
"On-us" checks	18,690.0	18,703.0	19,542.0	19,810.6	20,106.3
Automated clearing houses					
Federal Reserve System[f]	2,645.0	2,997.0	3,280.4	3,719.0	4,152.2
Private[g]	249.7	318.4	407.0	553.9	532.4
"On-us" ACH	595.0	738.0	861.0	1,057.0	1,557.6

[a]Number of originations. Data do not include nonvalue messages.

[b]Fedwire is operated by the Federal Reserve System.

[c]CHIPS, the Clearing House for Interbank Payments System, is operated by the New York Clearing House Association.

[d]Includes personal, commercial, government and traveler's checks, and commercial and postal money orders.

[e]Checks are processed with "on-us" by private check clearing houses, direct exchange, or the Federal Reserve.

[f]Includes all government and commercial debit and credit transfers as well as transfers sent by private, automated clearing houses to the Federal Reserve System for transmission to the receiving depository institution. In 1999, these were an estimated 153 million transfers. However, according to the Federal Reserve System, despite strong growth in both volume and value, the Federal Reserve System's market share of ACH transfers fell during the 1994-98 period as private ACH networks experienced even more explosive growth.

[g]The Electronic Payments Network, the largest private ACH services provider, estimates that its market share in 2001 had risen to approximately 20 percent.

Source: GAO analysis is based on the following: Bank for International Settlements, Committee on Payment and Settlement Systems, *Statistics on Payment Systems in the Group of Ten Countries—Figures for 1999*.

During forums held by the Federal Reserve System's Committee on the Federal Reserve System in the Payments Mechanism, held in May and June, 1997, committee members and Federal Reserve staff met with representatives from over 450 payment system participants, including banks of all sizes, clearing houses and third-party service providers, consumers, retailers, and academics. Although a few large banks and clearing houses thought the Federal Reserve System should exit the check collection and ACH businesses, the overwhelming majority of forum participants opposed Federal Reserve System withdrawal. Participants were concerned that the Federal Reserve System's exit could cause disruptions in the payment system.

Core Principles Establishes Internationally Accepted Policy Objectives That, Along with National Law, Guide Central Bank Involvement in Payment Systems

The *Core Principles* illustrates how the central banks see their roles in pursuing their objective of smoothly functioning payment systems.[21] Further, the *Core Principles* outlines central banks' roles in promoting the safety and efficiency of systemically important payment systems that they or others operate. The laws of the countries we studied support this aspect of the *Core Principles*. These countries charge their central banks with broad responsibility for ensuring the smooth operation and stability of payments systems. In their basic role as banks, central banks generally are charged with acting as a correspondent bank for other institutions, providing accounts, and carrying out interbank settlements. Nonetheless, countries' laws vary regarding the specific roles a central bank should play in the payment system.

Core Principles Outlines Central Banks' Objectives and Responsibilities for Systemically Important Payment Systems

Central banks in the G-10 countries[22] and Australia have endorsed the *Core Principles*, which sets forth 10 basic principles that should guide the design and operation of systemically important payment systems in all countries as well as four responsibilities of the central bank in applying the *Core Principles*. (The principles and responsibilities are presented in app. II.) The overarching public policy objectives for the Core Principles are safety and efficiency in systemically important payment systems. Although the *Core Principles* generally is considered to apply to wholesale payment systems, some payments industry officials said that some payment systems that process retail payments could reasonably be considered systemically important because of the cumulative size and volume of the payments they handle.

[21] Systemically important payment systems are a major channel by which shocks can be transmitted across domestic and international financial systems and markets. In most cases, these are wholesale payment systems.

[22] The G-10 is made up of 11 major industrialized countries that consult on general economic and financial matters. The 11 countries are Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States.

Providing for the safety of payment systems is mostly a matter of mitigating the risks inherent to the systems. These risks are listed and defined in table 2.

Table 2: Risks to Which Payment Systems Are Subject

Risk	Definition
Credit	The risk that a participant in a payment system will be unable to meet, in full, its financial obligations in the system when due or at any future time.
Liquidity	The risk that a participant in a payment system will be unable to meet its financial obligations in the system when expected due to insufficient funds, but may be able to pay in full at some later time.
Settlement	The risk that settlement in a payment system will not take place as expected. This risk can involve both credit and liquidity risk. It can also arise as a result of the operational risk.
Operational	The risk that technical or mechanical problems in a system or mistakes by human operators will cause disruptions to a system that could result in unexpected losses.
Systemic	The risk that the failure of one participant in a transfer system, or in financial markets generally, to meet its required obligations will cause other participants or financial institutions to be unable to meet their obligations (including settlement obligations in a transfer system) when due. Such a failure may cause significant liquidity or credit problems and, as a result, might threaten the stability of financial markets.
Legal	The risk of loss because of the unexpected applications of a law or regulation or because a contract cannot be enforced.
Fraud	The risk that a wrongful or criminal deception will lead to a financial loss for one of the parties involved.

Source: GAO analysis of various industry publications.

Core Principle IV seeks to mitigate settlement risk by endorsing prompt final settlement, preferably during the day but, minimally, at the end of the day. The two major types of wholesale payment settlement systems are RTGS and multilateral netting systems. Recently, several hybrid systems have also been developed. (These two major types of systems are described further in app. III.) In general, multilateral netting systems offer greater liquidity because gross receipts and deliveries are netted to a single position at the end of the day. An institution can make payments during the day as long as its receipts cover the payments by the end of the day. However, multilateral netting systems without proper risk controls can lead to significant systemic risk. Because transactions are processed throughout the day, but not settled until the end of the day, the inability of a member to settle a net debit position could have large unexpected liquidity effects on other system participants or the economy more broadly. RTGS systems rely on immediate and final settlement of transactions, and these systems have much less exposure to systemic risk that could result from a settlement failure. Without a system for the provision of adequate intraday credit, these systems cause potential liquidity constraints because they require that funds or credit be available at the time that a payer initiates a transaction.[23]

Efficiency in payment systems can be characterized as both operational and economic. Operational efficiency involves providing a required level and quality of payment services for minimum cost. Cost reductions beyond a certain point may result in slower, lower quality service. This creates trade-offs among speed, risk, and cost. Going beyond operational efficiency, economic efficiency refers to (1) pricing that, in the long run, covers all of the costs incurred and (2) charging those prices in a way that does not inappropriately influence the choice of a method of payment.

The *Core Principles* sets forth four responsibilities of the central bank in applying the core principles, two of which address oversight functions. The first is that the central bank should ensure that the systemically important systems it operates comply with the *Core Principles*, and the second is that the central bank should oversee compliance with the *Core Principles* by systems it does not operate, and it should have the ability to carry out this oversight.[24] Therefore, the *Core Principles* affirms the importance of central banks' oversight responsibility for their countries' systemically important payment systems, including those that they do not own or operate.

[23]Daylight credit is an important aspect of the RTGS systems discussed in this report. For Fedwire, the Federal Reserve System allows, within certain guidelines, the use of daylight overdrafts in banks' Federal Reserve accounts, as outlined in the Federal Reserve Board's Policy Statement on Payments System Risk. In other countries, various forms of intraday credit are used, including daylight overdrafts and intraday repurchase agreements.

[24]The other two responsibilities relate to how the central bank should clearly define and publicly disclose payments objectives and cooperate with other central banks and relevant authorities.

Laws Give Many Central Banks Broad Responsibility for Ensuring Efficient Operations and Reducing Systemic Risk in Payment Systems

The laws of most of the countries we studied give the central bank broad responsibility for ensuring that payment systems operate smoothly. In addition, in their basic role as banks, central banks are generally charged with providing accounts to certain financial institutions and effecting interbank settlement. While some countries are specifically charged with providing additional payment services or regulating private payment systems, others are not. Similarly, regulatory and oversight authority is not always specified in laws but is obtained through historical development and the broader mission of the central bank.

The European Central Bank (ECB) is the central bank for the countries that have adopted the euro.[25] In conjunction with the euro area countries' national central banks, the ECB oversees payment systems for the euro area and operates the Trans-European Automated Real-time Gross settlement Express Transfer (TARGET) system, the primary payment system for euro payments.[26] The ECB's powers and responsibilities are similar to those of national central banks. We therefore analyzed the ECB along with countries' national central banks. In developing TARGET, the ECB set out strict rules regarding the national central banks' provision of payment services, requiring each central bank to provide a RTGS system, which serves as a local component of TARGET.

The laws of Canada, France, Japan, and the United Kingdom cast the central bank as a monitoring entity having general powers to ensure that payment systems do not pose systemic risk. The central banks in those countries are not specifically charged with providing particular payment clearing services. However, as a matter of practice, the central bank in France, which plans to discontinue its check clearing service in 2002, will continue to operate services related to check fraud. Although Australia's law recognizes a limited role for the Reserve Bank of Australia to act as a service provider, the Reserve Bank of Australia's primary purpose regarding payments systems is to serve as an oversight and regulatory mechanism designed to control risk to promote the overall efficiency of Australia's financial system. German law authorizes the Bundesbank to furnish payments services, and the Bundesbank performs retail payment

[25]The 11 countries that have adopted the euro include Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain.

[26]TARGET is a RTGS system that transfers an average of 211,282 transfers per day, totaling a daily average of about 1.3 trillion euro.

functions, including check processing, credit transfers, checks, and direct debits as well as owning and operating RTGSplus, which is an RTGS hybrid system for wholesale payments.

The central banks we studied have general authority to take actions to protect against systemic risk. In some cases, the banks are to serve a particular regulatory function. For example, under Canadian law, the central bank decides upon the qualifications of payment systems determined by the central bank to pose systemic risk. However, except for Germany, Australia, and the United States, the laws of the countries we reviewed generally do not contemplate that the central bank is to regulate the provision of payment services for purposes unrelated to systemic risk.

Central Banks Are Involved in the Operations and Oversight of Wholesale Payment Systems

All of the central banks we studied provide settlement for wholesale payment systems. Moreover, these central banks participated in the design and development of, and have oversight over, wholesale payment systems. Most central banks play a role in providing these wholesale payment services. However, as demonstrated by the central banks we studied, central bank involvement in wholesale payment systems varies. Some central banks have full ownership and operational involvement in the payment system; others have little operational involvement beyond settlement services. Other central banks participate in partnerships. In some cases, the central bank is a major provider or perhaps the only provider of wholesale payment services. The Federal Reserve System, as previously noted, is a major provider of wholesale payment services.

Central Banks Participated in the Design and Development of Wholesale Payment Systems

Each of the central banks we reviewed has participated in the design and development of its country's wholesale payment system. For example, the Bundesbank collaborated in developing the RTGSplus system. The Bank of France played a major role in the development of France's systems. The Bank of England cooperated with the Clearing House Automated Payment System (CHAPS)[27] in the development of a new system, NewCHAPS;[28] the

[27]CHAPS is an electronic transfer system for sending same-day payments from bank to bank.

[28]Following a strategic review, the CHAPS Clearing Company and the Bank of England developed NewCHAPS, which was designed to be an enhanced replacement RTGS service for CHAPS Sterling and CHAPS Euro.

Bank of Canada assisted in the design and development of the Large Value Transfer System.

In the G-10 countries, the first automated RTGS system was Fedwire in the United States, which is owned and operated by the Federal Reserve System. Although there are some net settlement systems for wholesale payments today, many countries are transitioning to RTGS systems. In Europe, various decisions over the past 5 to 10 years have encouraged current and potential euro area countries to develop national RTGS systems. The trend toward RTGS systems extends beyond Europe's boundaries, as countries worldwide are adopting RTGS systems.

Central Banks' Roles in Providing and Overseeing Wholesale Payment Systems Vary

Central banks we studied played various roles in providing and overseeing wholesale payment services. All central banks provide key settlement services for wholesale payment systems. Some central banks own and operate wholesale payment systems that include clearance and settlement while others only provide oversight and settlement, leaving clearance and other processing activities to other parties. There is no clear pattern in the roles played by central banks in clearing wholesale payments.

In addition to the United States, two of the central banks we studied, the Bundesbank and the Bank of France, have full ownership of their respective wholesale payment systems. The Bundesbank owns and operates the RTGSplus system, which was developed with the input of the German banking industry. The Bundesbank has full control over the practices of the system for large-value payments.

The Bank of France owns and manages Transferts Banque de France, which is a RTGS system that is one of the two wholesale payment systems in France. The Bank of France is also a joint owner of the company that owns and operates France's other wholesale payment system, which is a hybrid,[29] real-time net settlement system. Although the Bank of France is only a partial owner of this system, it can exert considerable influence over it by virtue of its ownership role in the controlling company.

The Bank of England is a member and shareholder of CHAPS Inc., which operates England's sterling and euro RTGS systems. Although the Bank of

[29]The Paris Net Settlement system is described as a hybrid because it offers a netting mechanism while transactions are settled in real time.

England does not own or manage any payment clearing system, CHAPS payments settle by transferring funds among participating institutions' Bank of England accounts. The Bank of England is the settlement bank for both the CHAPS Sterling and CHAPS Euro.

The Bank of Canada has a more limited operational role in its system. The Bank of Canada entrusts the ownership and operation of the Large Value Transfer System (LVTS) to the Canadian Payments Association, which the Bank of Canada chairs. The Bank of Canada expressly guarantees settlement of LVTS in the event of the simultaneous default of more than one participant, and losses exceed available participant collateral. This guarantee is likened to "catastrophic insurance with a very large deductible," with the latter being the collateral provided by the participants.

Central Bank Involvement in Retail Payment Systems Varies Considerably and Is Influenced by a Variety of Factors

Although the extent of central bank oversight over retail payment operations varies, central banks generally consider retail payments as an important component of the payment system. As such, central banks have some responsibility for promoting well-functioning retail payment systems. The operational role of the central bank in retail payment clearing varies considerably among the countries we studied. The basic structure of retail payment systems depends largely on the structure of the underlying financial system and on the historical evolution of payment processes. Factors that influence central bank involvement in retail payment systems include the history and structure of the country's payment system and banking industry. While we identified several factors that influenced the involvement of a central bank in its country's retail payment system, these factors interact uniquely and occur to varying degrees in the systems we studied.

Retail Payments Are Paper-Based or Electronic and May Be Cleared through a Variety of Arrangements

Retail payments are generally lower in value and urgency from the perspective of the financial system than wholesale payments, but retail payments occur more frequently. They typically include consumer and commercial payments for goods and services. Noncash retail payment instruments are generally categorized as paper-based (most commonly checks) or electronic (most commonly credit cards, credit transfer, debit cards, and direct debits). These payment instruments are further described in table 3.

Table 3: Common Retail Payment Instruments

Payment instrument	Definition
Paper-based	
Checks	Written orders from one party (the drawer) to another (the drawee, normally a bank) requiring the drawee to pay a specified sum on demand to the drawer or to a third party specified by the drawer. Checks may be used for settling debts and withdrawing money from banks.
Electronic	
Credit cards	Instruments indicating that the holder has been granted a line of credit. Credit cards enable holders to make purchases and/or withdraw cash up to a prearranged ceiling; the credit granted can be settled in full by the end of a specified period or can be settled in part, with the balance taken as extended credit. Interest is charged on the amount of the extended credit, and the holder is sometimes charged an annual fee.
Credit transfers (GIRO)	Payment orders or possibly a sequence of payment orders made for the purpose of placing funds at the disposal of the beneficiary. Both the payment instructions and the funds described therein move from the bank of the payer/originator to the bank of the beneficiary, possibly via several other banks as intermediaries and/or more than one credit transfer system.
Debit cards	Cards that enable the holder to have purchases directly charged to funds on an account at a deposit-taking institution. The debit function may sometimes be combined with another function, such as cash withdrawal or check guarantee, on a single card.
Direct debits	Preauthorized debits on the payer's bank account initiated by the payee.

Source: Bank for International Settlements, Committee on Payment and Settlement Systems, *A Glossary of Terms Used in Payments and Settlement Systems,* 2001.

Central banks provide settlement for retail payments, but commercial banks also settle retail payments. Where the central bank provides settlement, it does so for "direct participants"—that is, institutions having settlement accounts at the central bank. Settlement of payments at the central bank sometimes requires tiering arrangements. Under these arrangements, "direct participants" settle payments through their accounts at the central bank, with indirect participants' settling accounts with a direct participant with whom they have a settlement arrangement. Such is the case with the Bank of England, which acts as a banker to the settlement banks that are direct members of the United Kingdom's primary payment clearing association. Settlement of retail payments may also occur through settlement agents, third-party arrangements, or correspondent accounts that institutions hold with each other for bilateral settlement.

Despite Variations in Central Bank Involvement, Most Have an Interest in Promoting Well-Functioning Payment Systems

Although many central banks work to ensure that their retail payment systems are well-functioning, their approaches diverge. Some central banks play a prominent regulatory and operational role in retail payments and see these roles as keys to fostering well-functioning retail systems, while others assume more limited roles. Whatever the level of involvement in oversight or operations, most central banks consider retail payments as important components of the payment system and therefore assume some responsibility in promoting well-functioning retail payment systems.

Structural Factors Influence Central Bank Involvement in the Clearance of Retail Payments

A number of structural factors influence the central bank's role in retail payments. For example, the involvement of the central bank in check clearing can vary. In countries with a concentrated banking industry, on-us check clearing will occur with higher frequency. On-us checks are checks that are deposited at the same bank on which they are drawn, so that no third party, including the central bank, is required for clearing or settlement. For example, Canada has few banks, heavy check use, and little central bank involvement in clearing retail payments.[30] On the other hand, the United States has a large number of banks and its central bank is heavily involved in providing check clearing services. If a country has many smaller banks, such as savings, rural, and cooperative banks, there will be more need for some kind of retail clearance system, thereby creating greater potential need for central bank involvement.

[30]The Bank of Canada does provide interbank net settlement for these payments.

Identifying the extent to which payment preferences influence central bank involvement in clearing payments is difficult. Some have suggested that central banks in countries that rely heavily on paper-based instruments are more involved in clearing retail payments, and that central banks of countries that are more reliant on electronic payments provide fewer clearing services. Central banks involved in check clearing include those in Germany, France, and the United States.[31] France and the United States rely heavily on checks for retail payments. In contrast, the Bundesbank is heavily involved in clearing a variety of retail payment instruments, but Germany is not particularly reliant on checks as a means of payment.

The physical size of a country determines the distances that payment instructions might have to travel between the paying and the drawing banks. This has particular relevance in countries that rely heavily on paper-based instruments such as checks, which might have to be physically moved great distances to be processed. For example, this is the case in the United States, which is much larger than any European country. The United States currently has approximately 19,000 depository institutions. Canada, on the other hand, has far fewer financial institutions but is also physically large and uses checks extensively. Private- sector correspondent banks clear many checks and compete with the central bank. The central bank, however, is perceived as a reliable and neutral intermediary to clear payments and provide settlement on a large scale for a diverse set of institutions.

Table 4 shows the relative importance of noncash payment instruments in selected countries.

[31]Due to check truncation, check payments in France are largely processed electronically, and all check clearing houses operated by the Banque de France will be closed in 2002. The Banque de France remains involved in guarding the safety of check payments in France by maintaining two national databases that contain information on lost or stolen checks and individuals barred from using checks.

Table 4: Relative Importance of Checks in Selected Countries, 1996-99

	Volume of cashless transactions, by year			
Country	1996	1997	1998	1999
Canada	45.4%	39.4%	34.6%	31.5%
France	43.6	43.0	40.7	n/a
Germany	6.4	5.7	4.8	4.0
United Kingdom	37.8	34.7	32.0	29.0
United States	74.5	72.9	70.8	68.6

n/a = not applicable

Source: Bank for International Settlements, Committee on Payment and Settlement Systems, *Statistics on Payment Systems in the Group of Ten Countries—Figures for 1999*, 2001.

Other Factors Influence the Involvement of Central Banks in Retail Payment Systems

A central bank's role in the retail payment system reflects historical events and developments that have shaped retail payment systems in a particular country over many years. For example, the GIRO system serves as a primary retail payment in many European countries. The GIRO system was originally developed by the European Postal agencies, rather than by banks. Historically, European banking systems were largely decentralized and in most cases highly regulated. Therefore, in the absence of an efficient payment system for retail payments developed by the banking industry, payers in most European countries turned to national institutions, such as the postal service, which offered credit transfers (so-called GIRO payments) through a nationwide network of branches. Commercial banks subsequently began to offer GIRO services. As a result of these events, many European countries have well-developed systems that do not rely on central bank clearing for credit transfers. These systems were originally established by the public sector to respond to needs that were not being met by the private sector. Similarly, as previously noted, the Federal Reserve System was established to respond to events that pointed to the lack of a private remedy to market problems.

Agency Comments

We received comments on a draft of this report from the Board of Governors of the Federal Reserve System. These comments are reprinted in appendix IV. Board staff also provided technical comments and corrections that we incorporated as appropriate.

We are sending copies of this report to the chairman of the House Subcommittee on Domestic Monetary Policy, Technology, and Economic Growth; the chairman of the Board of Governors of the Federal Reserve System; the president of the Federal Reserve Bank of Atlanta, and the president of the Federal Reserve Bank of New York. We will make copies available to others on request.

Please contact me or James McDermott, Assistant Director, at (202) 512-8678 if you or your staff have any questions concerning this report. Other key contributors to this report are James Angell, Thomas Conahan, Tonita W. Gillich, Lindsay Huot, and Desiree Whipple.

Sincerely yours,

Thomas J. McCool
Managing Director, Financial Markets and
Community Investment

Objectives, Scope, and Methodology

The objectives of this report are to (1) identify internationally recognized objectives for payment systems and central bank involvement in those systems, (2) describe the roles of central banks in the wholesale payment systems of other major industrialized countries and the key factors that influence those roles, and (3) describe the roles of central banks in the retail payment systems of other major industrialized countries and the key factors that influence those roles.

In analyzing the roles of other central banks in payment systems, we focused on countries with relatively modern, industrialized economies. These countries included Australia, Canada, France, Germany, Japan, the United Kingdom, and the United States. To identify widely held public policy objectives for payment systems, we reviewed *Core Principles for Systemically Important Payment Systems*, which was developed by the Committee on Payment and Settlement Systems (CPSS), of the Bank for International Settlements. The CPSS established the Task Force on Payment System Principles and Practices in May 1998 to consider what principles should govern the design and operation of payment systems in all countries. The task force sought to develop an international consensus on such principles. The task force included representatives not only from G-10 central banks and the European Central Bank but also from 11 other national central banks of countries in different stages of economic development from all over the world and representatives from the International Monetary Fund and the World Bank. The task force also consulted groups of central banks in Africa, the Americas, Asia, the Pacific Rim, and Europe. We also reviewed materials available on the Web sites of the central banks we studied; these sites often included mission statements, basic data, and authorizing statutes. We reviewed a variety of legal analyses and commentaries to analyze those statutes. Where we make statements regarding to central banks' authorizing statutes, they are based on these sources rather than on our original legal analysis.

To describe the roles of central banks in the wholesale and retail payment systems of other major industrialized countries and the key factors that influence those roles, we reviewed materials available on central bank Web sites as well as other articles and publications from various central banks. We reviewed publications available from the Bank for International Settlements, and also the European Central Bank's *Blue Book: Payment and Securities Settlement Systems in the European Union*. We also reviewed numerous articles and commentaries on the roles of central banks as well as discussions of recent reform efforts. To enhance our understanding of these materials, we interviewed Federal Reserve officials, members of trade associations, and officials from private-sector payment providers.

We conducted our work in Washington, D.C., and New York, N.Y., between June 2001 and January 2002 in accordance with generally accepted government auditing standards.

The Core Principles for Systemically Important Payments Systems and Central Bank Responsibilities

The core principles for systemically important payments systems (core principles) are shown in table 5.

Table 5: Core Principles for Systemically Important Payments Systems

Principle	Description
I	The system should have a well-founded legal basis under all relevant jurisdictions.
II	The system's rules and procedures should enable participants to have a clear understanding of the system's impact on each of the financial risks they incur through participation in it.
III	The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.
IV	The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.
V	A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.
VI	Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.
VII	The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.
VIII	The system should provide a means of making payments that is practical for its users and efficient for the economy.
IX	The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.
X	The system's governance arrangements should be effective, accountable and transparent.

The responsibilities of the central bank in applying the core principles are as follows:

- The central bank should define clearly its payments objectives and should disclose publicly its role and major policies with respect to systemically important payments systems.
- The central bank should ensure that the systems it operates comply with the core principles.
- The central bank should oversee compliance with the core principles by systems it does not operate and should have the ability to carry out this oversight.
- The central bank, in promoting payment system safety and efficiency through the core principles, should cooperate with other central banks and with any other relevant domestic or foreign authorities.

Different Wholesale Settlement Systems Mitigate Different Risks

Different forms of settlement for wholesale payments result in different risks. Various wholesale payment systems in major industrialized countries use similar means to transmit and process wholesale payments. However, they sometimes use different rules for settling those transactions. In general, wholesale payments are sent over separate, secure, interbank electronic wire transfer networks and are settled on the books of a central bank. That is, settlement is carried out by exchange of funds held in banks' reserve accounts at a central bank. However, various wholesale payment systems use different rules for settling these large-value payments. Some systems operate as real-time gross settlement (RTGS) systems, which continuously clear payment messages that are settled by transfer of central bank funds from paying banks to receiving banks. Other systems use net settlement rules, wherein the value of all payments due to and due from each bank in the network is calculated on a net basis before settlement. Each form of settling wholesale payments presents different risks to participants. Recently, some hybrid systems have been developed, building on the strengths and minimizing the risks associated with pure RTGS or netting systems.

RTGS Systems Mitigate Systemic Risk

RTGS systems are gross settlement systems in which both processing and settlement of funds transfer instructions take place continuously, or in real time, on a transaction by transaction basis. RTGS systems settle funds transfers without netting debits against credits and provide final settlement in real time, rather than periodically at prespecified times. In most RTGS systems, the central bank, in addition to being the settlement agent, can grant intraday credit to help the liquidity needed for the smooth operation of these systems. Participants typically can make payments throughout the day and only have to repay any outstanding intraday credit by the end of the day.

Because RTGS systems provide immediate finality of gross settlements, there is no systemic risk—that is, the risk that the failure to settle by one possibly insolvent participant would lead to settlement failures of other solvent participants due to unexpected liquidity shortfalls. However, as the entity guaranteeing the finality of each payment, the central bank faces credit risk created by the possible failure of a participant who uses intraday credit. In the absence of collateral for such overdrafts, the central bank assumes some amount of credit risk until the overdrafts are eliminated at the end of the day.

In recent years, central banks have taken steps to more directly manage intraday credit, including collaterization requirements, caps on intraday credit, and charging interest on intraday overdrafts. Fedwire was established in 1918 as a telegraphic system and was the first RTGS system among the G-10 countries. Presently, account tallies are maintained minute-by-minute. The Federal Reserve Banks generally allow financially healthy institutions the use of daylight overdrafts up to a set multiple of their capital and may impose certain additional requirements, including collateral. In 1994, the Federal Reserve System began assessing a fee for the provision of this daylight liquidity. Other central banks have only recently adopted RTGS systems and have established a variety of intraday credit policies, such as intraday repurchase agreements, collateralized daylight overdrafts, and other policies.

Net Settlement Systems Reduce Liquidity Needs

Other networks operate under net settlement rules. Under these rules, the value of all payments due to and due from each bank in the network is calculated on a net basis bilaterally or multilaterally. This occurs at some set interval—usually the end of each business day—or, in some newly developed systems, continuously throughout the day. Banks ending the day in a net debit position transfer reserves to the net creditors, typically using a settlement account at the central bank.

Net settlement systems, with delayed or end of business day settlement, enhance liquidity in the payment system because such systems potentially allow payers to initiate a transaction without having the funds immediately on hand, but available pending final settlement. However, this can increase the most serious risk in netting systems, which is systemic risk. Recognizing that systemic risk is inherent in netting systems, central banks of the G-10 countries formulated minimum standards for netting schemes in the Lamfalussy Standards.[32] The standards stress the legal basis for netting and the need for multilateral netting schemes to have adequate procedures for the management of credit and liquidity risks.

[32]The main objective of the Lamfalussy Standards is that the participants and the service providers should have both the incentives and the capability to manage credit and liquidity risks arising from the netting schemes.

Although netting arrangements generally reduce the need for central bank funds, they also expose the participants to credit risks as they implicitly extend large volumes of payment-related intraday credit to one another. This credit represents the willingness of participants to accept or send payment messages on the assumption that the sender will cover any net debit obligations at settlement. The settlement of payments, by the delivery of reserves at periodic, usually daily, intervals is therefore an important test of the solvency and liquidity of the participants. In recent years, central banks in countries using net settlement rules have taken steps to reduce credit risks in these systems as part of overall programs to reduce systemic risks.

Comments from the Federal Reserve System

BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551

LOUISE L. ROSEMAN
DIRECTOR
DIVISION OF
RESERVE BANK OPERATIONS
AND PAYMENT SYSTEMS

February 19, 2002

Mr. Thomas J. McCool
Managing Director, Financial Markets
and Community Investment
United States General Accounting Office
Washington, DC 20548

Dear Mr. McCool:

Thank you for the opportunity to comment on the GAO's draft report entitled Payment Systems: Central Bank Roles Vary, but Goals Are the Same. We believe the report accurately recognizes the common and important roles played by central banks in overseeing payment systems and providing settlement services. In addition, the report provides insight into the reasons for the differences in the extent of central banks' provision of payment clearing services.

We have provided technical comments on the draft report under separate cover.

Sincerely,

Louise L. Roseman

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