Federal Reserve Bank of Minneapolis

2000 Annual Report

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President’s Message

IN YEARS PAST, the Minneapolis Fed’s Annual Report essay has often voiced ideas that cut against the grain of conventional wisdom, including, on occasion, wisdom within the Federal Reserve. It’s not that we’re given to iconoclasm for its own sake; rather, it is our intention to inform debate on particular issues that we think significant, irrespective of their popularity. This year’s essay is no exception.

Unlike monetary policy and banking supervision, the role of the Federal Reserve System as a payment services provider is likely less well-known among the general public, and yet this function demands a great deal of our time and effort. The collection of checks, the processing of electronic funds transfers and the provision of net settlement services to private clearing arrangements may seem rather arcane, but they are also rather important for a smooth-running economy.

The question at hand regards the Federal Reserve’s role in the payments system, generally speaking, but specifically its role in a system that is undergoing rapid change due to technological and institutional innovations. As Ed Green and Dick Todd write: “[I]n every significant transformation of the economic environment, all institutions must monitor, and if necessary realign, their strategies.” While the views in this essay are Ed and Dick’s, we are clearly sympathetic to their overall message, and their work provides a useful framework to think about the Federal Reserve’s role in the evolving payments system. It is important to emphasize, though, that we print the essay to stimulate thought and discussion at this stage. The essay does not represent any change in Federal Reserve policy, practice or commitment to serve particular payment services markets.

To sum up, the essay may not provide all the answers but it raises some pertinent questions. Those of us within the Minneapolis Fed spend a fair amount of time considering such questions, as befits our role, but we also think there is value in discussing such issues within a public context. I hope you agree, and that you find the following essay informative and engaging.

Gary H. Stern
President
Thoughts on the Fed's Role in the Payments System

Edward J. Green
Senior Policy Advisor
Federal Reserve Bank of Chicago
and
Richard M. Todd
Vice President
Federal Reserve Bank of Minneapolis
TECHNOLOGICAL AND INSTITUTIONAL INNOVATIONS, including the growth of the Internet and of interstate banking, have enhanced the prospect for rapid evolution of the U.S. payments system. The Federal Reserve is collaborating with other payments system participants to facilitate this change. The Fed has undertaken to foster the efficiency, integrity and accessibility of the payments system, and that commitment will remain as timely when the change is complete as it is today. However, as in every significant transformation of the economic environment, all institutions must monitor, and if necessary realign, their strategies, to ensure that they continue to support their respective goals under the emerging conditions. Although forethought cannot frame an all-embracing plan that will be sound regardless of what the future brings, it can identify a general strategic direction that supports the institution’s enduring goal and provides the agility needed to take best advantage of emerging circumstances. Thus, while no one knows whether the U.S. payments system will evolve rapidly or slowly, responsible institutions will already be considering how they can best serve the public if and when current policy achieves the transition to a new generation of payment instruments.

In that spirit, we suggest an approach to keeping the Reserve Banks’ role as payment services providers well aligned with the Fed’s mission. We draw on both general economic and business principles and also the specific principles that Congress and the Federal Reserve have adopted over time to ensure that the Reserve Banks’ service-provider role embodies good public policy. These considerations lead us to recommend a strategy for Reserve Bank payment services provision that gives top priority to services closely related to interbank settlement. For most other payment services under our strategy, the transition to the next generation of payment instruments would prompt the Reserve Banks to make a transition as well, toward promoting efficiency, integrity and accessibility primarily by means other than direct service provision—such as participation in the setting of standards, the drafting of model legislation and the regulation of payment services markets.

Our reasoning about the Federal Reserve’s strategy toward the emerging payments system starts from the idea that specialization is beneficial to most organizations and has specific additional benefits for the Federal Reserve System. That specialization promotes efficiency is one of the most basic and firmly established principles of economics and a widespread working assumption in management theory as well. It implies that agents in the economy— institutions, as well as individuals—tend to serve the public best by focusing their resources and efforts on their respective areas of special strength, rather than by each attempting to do the broadest range of tasks that it can manage at a merely competent level. Since we regard economic analysis corroborated by historical evidence as indicating that a central bank’s most critical functions in the payments system revolve around settlement of interbank payments, we view these functions as a central bank’s area of primary payment services strength. Applying the specialization principle to the Fed, we thus recommend that specific services comprising, or closely related to, the Reserve Banks’ core interbank settlement functions

THE VIEWS EXPRESSED IN THIS PAPER ARE SOLELY THOSE OF THE AUTHORS, AND NOT NECESSARILY THOSE OF THE FEDERAL RESERVE BANK OF MINNEAPOLIS, THE FEDERAL RESERVE BANK OF CHICAGO OR THE FEDERAL RESERVE SYSTEM.
Our reasoning about the Federal Reserve's strategy toward the emerging payments system starts from the idea that specialization is beneficial to most organizations and has specific additional benefits for the Federal Reserve System. Should have highest strategic priority among the Reserve Banks' payment services activities.

This recommendation is strengthened by some considerations specific to the Federal Reserve System. The Fed is, preeminently, the U.S. central bank, responsible for monetary policy, aspects of financial supervision and regulation, and oversight of the functioning of the payments system. Direct provision of payment services may support these functions in some respects, but it also creates potential difficulties with them in others. Governance structure is an example. A regionally oriented structure of 12 distinct, independent corporations has contributed to central bank independence and public accountability by providing a coherent institutional basis for the Reserve Bank presidents' role in making and implementing monetary policy. However, as the U.S. banking industry has become more integrated nationwide, an integrated governance structure for the provision of Federal Reserve payment services has become practically indispensable. Because the central bank functions and payment services within each Reserve Bank share some common support and overhead, such as information technology staff and facilities, the governance arrangements for the two types of functions cannot be kept completely distinct. As a matter of logic, even if moving de facto to joint governance of the 12 Reserve Banks in a broad sphere of decision making would prove to be key to enabling Federal Reserve financial services to recover their costs in a competitive market, such a market test would not conclusively show such consolidation to be desirable. A cost-recovery test for priced financial services is not designed to reflect the burden (or, conceivably, the benefit) that consolidation might entail for monetary policy and other such central bank functions.

A further consideration in favor of the Reserve Banks playing a specialized role in the payments system concerns maintaining an overall relationship of mutual deference between the Fed and the private sector. The Fed's reputation as a trustworthy and neutral organization focused on broad public objectives is an indispensable asset in meeting its public responsibilities. That asset can be put at some risk if banks, other commercial firms or the general public perceive the Reserve Banks to be encroaching on activities that the private sector can perform efficiently and equitably.4

These various considerations do not have the stark consequence that the Reserve Banks should never participate in markets beyond what is required to discharge the Fed's core central-bank responsibilities. They do suggest, however, that such participation be undertaken cautiously, when careful consideration shows that the several alternative means of attaining the Fed's payments system objectives are clearly inferior.

Near the end of this article, we apply the ideas introduced here by developing a list of specific observations and recommendations concerning the Fed's role in the payments system. If the payments environment evolves as we anticipate, these recommendations would focus the Reserve Banks' payments provider role more tightly. The more focused role we envision is consistent, we believe, with current Federal Reserve legislative authority and policy.5 Some current activities would be phased out if their policy rationales became less salient.6

By recommending that the Federal Reserve should specialize in some activities in which we think it has a comparative advantage, we are by no means advocating that those activities should be reserved to the Fed alone. Nor do we advocate that other activities, otherwise appropriate for the Reserve Banks, should be proscribed by law or regulation solely on this account. To the contrary, institutions' spheres of comparative advantage are best identified, and the institutions' respective activities accordingly shaped, through a continuous process of open and vigorous competition.
Thoughts on the Fed’s Role in the Payments System

The Fed’s Payments System Objectives and Tools for Achieving Them

The efficiency, integrity and accessibility of payment services are the well-established goals of the Federal Reserve with regard to the payments system. (See inset on adjacent page that surveys the Fed’s authoritative statements and interpretations of these goals.) Direct provision of payment services is one means to attain these goals, but it is not the only means that the Fed can and does use. To facilitate a balanced view on the role of service provision in the Fed’s pursuit of payments system objectives, we outline in this section a variety of methods available to, and largely in use by, the Fed. This survey sets the stage to consider which options the Fed should use in a particular situation and, in particular, when it should take on the role of payment services provider.

The Federal Reserve has pursued its payments system goals in part through direct provision of payment services. As a nationwide complex of institutions, the Reserve Banks can address payments system access issues directly, by providing interbank payment services to all banks on equivalent terms. They can also address integrity issues by making their services very reliable as well as accessible, and by offering them to failing institutions as well as healthy ones. The hard part is to meet the access and integrity objectives through direct service provision without falling short on the efficiency objective. However, the Monetary Control Act of 1980 (MCA) requires the Reserve Banks to be cost-effective enough to recover the costs of their directly provided services, including adjustments for taxes, the cost of capital and other private-sector expenses, from the fees they charge their customers. According to a priced-services accounting system that has been in place for almost 20 years and has survived significant internal and external scrutiny, the Reserve Banks have met the MCA's requirements. In that sense, the Fed has successfully provided wide access to a set of reliable and efficient services for many years, in furtherance of its general goals for the payments system.

Provision of payments system services by the Reserve Banks continues to be guided by the White Paper. This guidance was reaffirmed and amplified during the 1990s, when Federal Reserve Chairman Alan Greenspan asked then-Vice Chair Alice Rivlin to head a committee reviewing the Reserve Banks’ role in providing payment services, especially automated clearinghouse (ACH) and check clearing. On the basis of internal analysis as well as extensive public testimony, the Rivlin Committee reported in early 1998 that the Reserve Banks should continue to provide ACH and check clearing services.7

Besides direct provision of services by the Reserve Banks, there are other ways to pursue the Fed’s goal of maintaining a U.S. payments system that serves the public well. Perhaps the simplest alternative is to rely on private market institutions to provide efficient, reliable and accessible payment services. Economic theory implies that, in an ideal environment, private competition will lead to efficient arrangements for producing and distributing services that are of optimal quality and available to all at prices appropriately reflecting marginal cost. Experience suggests that this actually occurs, at least approximately and sufficiently, for many goods and services in the U.S. economy. Competition is also generally accepted to be especially successful in promoting long-term innovation and efficiency in many markets. In the payments system, private competition is already the primary mechanism for ensuring access to low-cost, reliable services for consumers and nonfinancial businesses. Deferring to private market provision of
Contestability disciplines market participants to pursue efficiency, integrity and accessibility of services.

The Federal Reserve’s Objectives Regarding the Payments System and Payment Services Provision

**The Federal Reserve Board of Governors** articulated the Fed’s payments system objectives in “The Federal Reserve in the Payments System,” published in the *Federal Reserve Bulletin* in May 1990. Also known as the White Paper, this article states that “The Federal Reserve will continue to bring to payment markets an overall concern for safety and soundness, promotion of operational efficiency, and equitable access. Indeed, those considerations relating to integrity, efficiency, and access to the payments system will remain at the core of the Federal Reserve’s role and responsibilities regarding the operation of the payments system.” The three key words that signify the Fed’s broad payments system objectives—integrity, efficiency and accessibility—have been repeatedly reaffirmed.

The White Paper and other Federal Reserve documents interpret more specifically what those three objectives mean. With regard to integrity, the White Paper not only offers “safety and soundness” as a synonym but also goes on to explain that “A reliable payments system is crucial to the economic growth and stability of the nation. The smooth functioning of markets for virtually every good and service is dependent on the smooth functioning of banking and financial markets, which, in turn, is dependent on the integrity of the nation’s payments system.” It cites payment breakdowns during the Panic of 1907 and in the wake of the 1974 failure of Bankhaus Herstatt in Germany as examples of financial disruptions that the Fed seeks to minimize. It suggests that the Fed’s roles in providing a reliable interbank settlement mechanism and payments system access to failing institutions help prevent such breakdowns.

The White Paper does not explicitly define efficiency, but by implication and context it seems clear that a standard notion of economic efficiency is intended. Loosely speaking, this implies that the social cost of the resources used to provide the prevailing level of payment services cannot be reduced and that it is not possible to make everyone better off by least-cost provision of more or less of some payment services. In a dynamic economy, this also encompasses efficiency over time, including appropriate investment in new technologies and development of new services.

The Fed’s goal of promoting access to payment services primarily refers to access by banks (defined to include thrifts, mutual savings banks and credit unions). As indicated in the White Paper and elsewhere, the Fed does not necessarily aim directly at promoting payments system access by consumers and nonfinancial businesses. Instead it seeks to ensure that banks have equitable access to interbank payment services, in order that the banks in turn can make a broad range of payment services available on competitive market terms to U.S. consumers and nonfinancial businesses.

The White Paper explicitly ties the Reserve Banks’ role as payments provider to the Fed’s general payments system objectives. It states that “the role of the Federal Reserve in providing payment services is to promote the integrity and efficiency of the payments mechanism and to ensure the provision of payment services to all depository institutions on an equitable basis, and to do so in an atmosphere of competitive fairness.” That is, the Reserve
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The Federal Reserve’s Objectives Regarding the Payments System and Payment Services Provision—continued

Banks engage in payments provision as a means of pursuing the Fed’s overall payments system objectives.

* The Federal Reserve is responsible for administering certain laws and regulations that deal directly with consumer and small business payment matters. However, the Fed does not have general responsibility or authority for ensuring consumer and nonfinancial business access to the payments system.

interbank clearing and settling services is also an option the Fed can consider in pursuing its payments system objectives. For some services, such as the clearing of interbank credit card, ATM and debit card payments, the Fed has largely done so.8

Economic theory also acknowledges conditions under which private markets alone will not ensure efficient, reliable and equitably accessible service provision, and there are concerns that these conditions may prevail in some payment markets. For example, if a provider’s average cost of providing a service declines continuously as its level of production increases, efficient production requires that there be only one provider, in order to capture these economies of scale. This is not necessarily a problem per se, because potential entrants can provide competitive discipline to the incumbent provider without actually having to enter the market themselves. Markets subject to such potential competition are called contestable. However there can be a problem for contestability if irretrievable “sunk” costs associated with entering or exiting the industry constitute a barrier to entry by a potential competitor. Under these uncontestable-market conditions, the single private seller could restrict output below the efficiently produced level, in order to raise prices and increase profits. Alternatively, the monopoly producer might be free to increase profits by reducing the integrity of the product below the efficient level of product quality. Because of higher prices and lower quality, some potential consumers who would have been willing to purchase the service at the efficient price and quality will, in effect, have lost access to service.

This general description of a monopolized market is thought by some to capture the situation that would prevail if the provision of check clearing services to small, remote markets were left to the private market. It is assumed, that is, that these markets have only enough volume to support a single physical shipment of checks per day, and that there are irretrievable sunk costs to enter or exit the clearing business. Such conditions could result in a single for-profit shipper with monopoly power over check clearing services in that area. At best the banks in that area would pay high prices for poor service. Fears of just this outcome were frequently cited in the testimony of rural bankers before the Rivlin Committee, and it is a traditional rationale for the nonprofit Reserve Banks to provide check clearing services at cost in rural areas.

Private competitors may also fail to achieve socially optimal outcomes if efficient service provision requires using a single shared resource, and the individual providers are unable to agree on how to organize and manage the shared resource. On the one hand, critical shared resources do not necessarily pose an insurmountable problem to industry participants, as
The central question of this article is: Which options should the Fed use to advance its public policy goals for the payments system, and, in particular, when should it take on the role of payment services provider?

illustrated by the generally successful operation of mutually owned and operated clearing institutions in credit card, debit card and ATM networks. On the other hand, neither can the viability of such institutions be taken for granted, as suggested by the history of litigation and member “politics” experienced by mutually owned clearing organizations such as Visa and MasterCard. When unable to agree among themselves on how to provide critical shared resources, industry participants may invite a neutral (generally nonprofit) third party, including perhaps a government or government-sponsored entity, to assist in arranging for the needed services. Alternatively, public policymakers may step in themselves, if the industry appears unable to arrange the provision of shared services in a way that promotes efficiency, integrity and accessibility. For example, historically the Reserve Banks’ entry into payment services provision partly reflected the private market’s inability to arrange for a single set of accounts to effect interbank settlement. (For further details, see the inset on page 13.)

Private market “failures” of these and other kinds can be addressed in several ways. At least three broad alternatives to direct Reserve Bank service provision can be identified: changing the environment that gave rise to market failure so that private competition can again be relied on; regulating the private providers; and arranging for public or nonprofit service provision by an entity other than the Federal Reserve.

The factors that give rise to a market failure may be inherent in the industry’s technology (as in the example above, with declining cost and barriers to entry) or may reflect financial and institutional circumstances (such as a price-fixing conspiracy supported by a successful strategy of eliminating competitors by predatory pricing). The former requires a fundamental technological solution, if competitive forces alone are to be trusted. Through the passage of time, and perhaps in response to initiatives promoted by the Fed and other nonprivate entities, new technologies less likely to lead to market failure may be devised. The same forces—time and sometimes promotion by the Fed and others—may also be required to develop new institutional arrangements that support the introduction and usage of the new technologies. When successful, the new technologies transform the competitive environment, eliminating the market failures and permitting private competition to lead to the desired outcomes. For example, several new technologies designed to use electronic images instead of paper originals to clear checks could eliminate the natural monopoly problem said to plague rural check clearing markets today. The Fed is among the institutions promoting and piloting these technologies. To the extent that the Fed and others successfully convert the check clearing business to electronics, the markets for both rural and urban check clearing may be perfectly well served by private competition in the future.

Market failure deriving from persistent financial or institutional power is amenable to correction by legal intervention under antitrust laws. If the market failure arose solely from historical or strategic circumstances unrelated to the underlying technology, interventions such as repealing legal obstacles to emerging competitors can permanently correct the problem and again allow reliance on private service provision. Sometimes the market failure involves a combination of technological factors and historical circumstances. In these cases, new technology and legal intervention may both be required for private service provision to again lead to desired outcomes. The Fed does not have direct authority or responsibility for antitrust enforcement (except for limited authority related to bank mergers), so it cannot directly pursue its payments system objectives through this means. However, when warranted it can contribute
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significant relevant information on the basis of its knowledge of payments industry conditions and its economic research capabilities.

When the technology in an industry appears to be enduringly inconsistent with good public policy outcomes under unfettered competition, ongoing intervention by government or government-sponsored regulators may be an effective alternative. In the context of the payments system, specifically, the Federal Reserve System currently acts as a consumer-protection regulator in consumer payment and credit markets, under legislative authority. If it wished, Congress could expand the Federal Reserve System’s regulatory powers over interbank payment markets, as an alternative to direct provision of services by the Reserve Banks.9

Although effective in principle, regulation can be difficult to implement well over the long haul. In practice, it may sometimes be more effective to charter a government body or nonprofit agency to provide or subsidize certain services, rather than attempting to regulate private providers. The historical origins of the Federal Reserve System, discussed below, partly reflect these concerns, as do the origins of other government-sponsored service providers, such as public postal services. A somewhat different example is the provision of scheduled air service to small cities under the Essential Air Service program initiated in the Airline Deregulation Act of 1978. In this case, the federal government has not established a nonprofit provider but instead subsidizes private airlines to provide the desired service (GAO 2000).

And in Switzerland, the Swiss Interbank Clearing (SIC) system, which settles interbank payments via irrevocable transfers of funds held at the Swiss central bank, was developed by a private joint venture, Telekurs AG, in collaboration with the central bank. Check clearing also takes place at Telekurs, under central bank supervision (Bank for International Settlements 1993, pp. 361-363). The Fed could use similar arrangements for services such as check clearing, including in remote rural areas.

Specialization and the Core Functions of the Reserve Banks in the Payments System

THE CENTRAL QUESTION OF THIS ARTICLE IS: Which options should the Fed use to advance its public policy goals for the payments system, and, in particular, when should it take on the role of payment services provider? Our answer, developed more fully in subsequent sections of this paper, is tied to our view that the unique strength of the Federal Reserve in the payments system derives from its status as the U.S. central bank. We will infer from this premise, and from the premise that specialization is generally beneficial, that the way in which the Fed pursues its payments system goals should be determined in large measure by its core central-bank function. Before pursuing that line of reasoning further, in this section we defend the general specialization principle and characterize the core function of a central bank in the payments system.

The benefits of specialization among nations were elucidated early in the history of economics, most clearly by David Ricardo. His key idea was that all countries benefit when goods are freely traded and each country focuses its finite resources on producing those goods in which it has a comparative advantage. As long as countries have finite but different endowments of resources (natural resources, human resources and capital), then specializa-
One implication ... is that as service providers the Federal Reserve Banks should place high strategic priority on services that the central bank has special advantages in providing.

Interbank Settlement and the Emergence of Central Banks

Here we examine in more detail the development of corresponding banking arrangements that paved the way for the emergence of central banks as hubs in national payment networks. (See Goodhart 1988 for a detailed analysis.) We cast our discussion in terms of check transactions, which were the principal form of transactions (both for large- and small-value payments) from the mid-19th century until the Federal Reserve introduced the precursor to Fedwire, its wire transfer service for large-value payments, in 1918. The points that we make here are as valid for electronic payments as for checks, however.

To begin, consider how transfers of bank balances are used to make payments in an economy with only one bank. A person (household or firm) holds wealth in a demand account, with zero or very low return, primarily in order to make payments. Payment by transfer of a bank balance is acceptable to a payee because it is secure against both theft and loss of market value and is verifiable. Payment by transfer of bank balances is mutually advantageous to the payor and payee because it is fairly inexpensive, so that the cost of making a payment does not eat up the gain to trade.

Now consider what happens when there are several banks. It would probably be infeasible, and would certainly be inefficient, for each person to have an account at every bank. Unless two traders happen to have accounts at the same bank, no individual banker can make payments for them in the way that has just been envisioned. Payment requires a way to get funds from one bank to another. Now, if there are relatively few banks (as in Canada, until recently), a solution to this problem is for every bank to have an account with every other bank. Suppose that, with this arrangement in effect, A writes a check for $1,000 to B, who has a different bank from A. B takes the check to his or her bank, which in turn presents it to A's bank. A's bank debits $1,000 from A's account and credits $1,000 to the account of B's bank at A's bank. B's bank then credits $1,000 to B's account. Over time, there will be payment flows from account holders at A's bank to account holders at B's bank and vice versa. Then—say, when the balance in each bank's account at the other is above $1 million—the banks can agree to reduce those balances by offsetting amounts of up to $1 million without any funds actually having to be transferred. Banks' ability to make such reductions of offsetting payments, known as bilateral netting, can keep the cost of making payments by interbank transfer almost as low as by transfer of balances within a single bank. Only where there is persistent asymmetry in the payment flows between the two banks does it become necessary to make an actual money transfer, which typically does involve significant cost.*

During the period 1837-1913, the United States did not have a central bank. The regime of interbank payments just described was, in principle, how the U.S. payments system operated. However, since there were too many banks for it to be advantageous for every bank to have an account at every other one, a system of correspondent banking arose. Actually, there was a hierarchy of correspondent banks. Each small city had one or more correspondents that served the local banks; each major city had several correspondents that served the correspondent banks of the smaller cities of that region; and New York City

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Federal Reserve Bank of St. Louis
had a number of banks that were correspondents for the regional correspondent banks across the country. If B’s bank did not have an account at A’s bank, then it presented A’s check to a third bank—the correspondent bank—at which both it and A’s bank had accounts, and the correspondent bank transferred the amount of the check from the account of A’s bank to the account of B’s bank. Moreover, if there is a cycle of offsetting payments—$1,000 from A to B, $1,000 from B to C and $1,000 from C to A—then the payments that are induced between these payors’ banks cancel. Correspondent banking thus provides the possibility of economizing in the payments process by multilateral netting, which reduces the need to make actual money transfers even below the level that would be required under bilateral netting.

Offsetting interbank payments such as we have just discussed typically are not simultaneous. If a correspondent bank waits until receipt of an offsetting payment in order to do netting, rather than debiting the bank on which the first check is drawn, then either the bank that presents the first check, or the correspondent bank, is extending credit to the paying bank of that first check. For example, if A’s bank deposits a check to A from B in the morning and the correspondent bank promptly credits the amount of the check to the account of A’s bank, while B’s bank does not deposit a check for an equal amount to B from A (or payable to and from any two customers of the respective banks of B and A) until the afternoon, then the correspondent bank is making a loan to B’s bank over the midday period. On the other hand, if the correspondent bank waits until an offsetting check is deposited with it to credit the account of A’s bank, while not debiting the account of B’s bank (which would constitute gross payment rather than net payment), then A’s bank is extending credit to B’s bank over midday, in effect. Because the correspondent bank has an ongoing relationship with each of its respondents, its credit is typically more acceptable to the presenting bank than the credit of a payor bank that the presenting bank may not know well. When the correspondent bank provides credit in this way, it has the option, in effect, to insure the value of the payment to the presenting bank. ** That is, the correspondent irrevocably credits the account of the paying bank at the time of presentation. Such an arrangement is said to provide immediate finality. Particularly in the case of large-value payments, interbank payments are made more efficient by the provision of legal and practical immediate finality in this way.

The roles that large correspondent banks played in netting interbank obligations and extending credit to facilitate interbank settlement were, in our view, the core payments system roles assumed by the Reserve Banks and other central banks.

* Before the Reserve Banks provided a streamlined interbank settlement service, there was a large, direct cost in the form of expensive shipment of currency or gold. Today there remains a cost, albeit a much smaller one, associated with the opportunity cost of holding wealth as balances to effect settlement rather than investing it in productive projects.

** That is, the correspondent bank has the option to offer its respondents a contract to this effect. In some cases, the correspondent may be required by law to do so.
Reserve Banks should ensure that when they provide payment services, they do so in a way that does not impede entry or exit in those markets.

The idea that specialization is beneficial is also widely assumed to apply to firms and other organizations. At first glance, this assumption may seem suspect. If Firm A has efficiently specialized in producing good X, and firm B has efficiently specialized in producing good Y, why couldn’t a merged firm A+B remain equally efficient at producing X and Y? After all, individual firms appear to be free to expand not only their efforts but also the resources they employ, whereas nations can only slowly expand their total resource base. So why can’t firms (and other organizations) avoid the need to specialize by simply adding enough resources to perform multiple diverse activities efficiently?

There is no hard and fast reason why organizations cannot expand to perform a range of tasks well, but experience suggests that the results are often disappointing. Perhaps the most familiar evidence for the benefits of organizational specialization stems from the demise of many of the conglomerates formed in the 1960s. These were firms that combined, through mergers and acquisitions, numerous diverse activities under a single management and ownership structure. Over time, many of these entities underperformed their less-diversified, more-focused competitors (Ravenscraft and Scherer 1987), and by the 1980s many were broken up in what Bhagat, Shleifer and Vishny (1990, p. 2) refer to as the “deconglomeratization of American business and a return to corporate specialization.”

Although the frequently disappointing performance of large, diversified organizations is not fully understood, experience and theory suggest that there may be limits on how many different activities can be managed effectively in a single organization. No one manager can be truly expert on a wide range of products and activities, so multiple management lines are required to maintain an adequate knowledge base. It seems, however, that the effectiveness of multiple management lines is often less than would be expected by summing the results of their independent operation, perhaps because of internal rivalries, or because of disputes and ambiguities related to ex-ante incentives and ex-post rewards.

Although we recognize that the intellectual foundations of the specialization principle for organizations are less complete than those underlying Ricardo’s comparative advantage concept for nations, we believe that the principle is fairly strongly supported by the weight of practical experience and by elements of financial economics and of organizational studies.

How would the general principle of specialization be applied to the Reserve Banks’ role in the payments system? One implication, we will argue, is that as a service provider the Reserve Banks should place high strategic priority on services that the central bank has special advantages in providing. Specifically, this strategic core of payment services consists of maintaining deposit accounts for private banks and providing short-term credit to, and effecting transfers of balances among, those accounts as a means of settling interbank obligations efficiently. Our characterization of this core function relies on consideration of both economic history and economic theory.

We define a central bank to be an institution that:

• has both the government and the commercial banks as account holders;
• can influence overall interbank credit market conditions, through its credit policies toward account-holding banks and its intermediation on behalf of the government;...
Thoughts on the Fed's Role in the Payments System

The Federal Reserve System has been given lead public policy responsibility for achieving credit market conditions that foster prosperity and economic stability—price stability in particular.

This definition reflects the fact that, historically, central banks have been chartered to perform two functions. One is to be an intermediary between the government and its lenders, enabling the government to obtain credit by ensuring that implicit default through inflation will occur only in genuine national emergencies. The other is to serve broad public interests as the trustworthy and neutral apex of a hierarchy of banks that, in turn, provide the nonbank public with accounts used to settle financial, business and personal payments by transfer of balances. Indeed, there is an economy of scope between these two functions that gives the central bank a comparative advantage in serving the latter. That is, since almost all banks need to transfer funds from their customers to the government to pay taxes, the government’s bank is in a natural position to serve as apex.

The role as apex of the banking hierarchy puts the central bank in a unique and distinguished position in the payments business. As explained in more detail on page 13, this role evolved out of market interactions, as correspondent banking grew from provision of a passive service—simply maintaining an account for respondents—to a role with respect to banks that is closely analogous to the role that banks play with respect to their nonbank customers—including netting, extension of credit and concomitant monitoring of creditworthiness.

Moreover, just as private banks are often structured to avoid conflicts of interest with their own nonbank customers, central banks evolved in part to avoid conflicts of interest with banks. A foundry, for example, would be loath to have its bank also be in the foundry business. As lender to the foundry, the bank would have a legitimate need for information regarding the foundry's customers. If the bank also owned a foundry itself, the bank could abuse the information obtained from the borrowing foundry to compete unfairly in their shared business by stealing the foundry’s most profitable customers. For similar reasons, banks were reluctant to have a correspondent bank that also did general banking business in the same market.

Market demand thus arose for a special-purpose intermediary (that is, one that does not do business with nonbank traders) that is able to play this role without the incentive conflicts that a bank would have. Both private-sector and public-sector intermediaries of this type exist, typically as nonprofit organizations in order to further mitigate incentive conflicts. And both the private- and public-sector special intermediaries are subject to government oversight as well. Examples within the private sector include mutually owned clearinghouses for checks, credit card receivables (such as Visa), and electronic funds and securities transfers as well as the bank-owned, government-regulated, special correspondent institutions known as bankers’ banks.

Examples within the government or government-sponsored sector include specialized intermediaries such as central banks and certain industry lenders (such as the Federal Home Loan Banks in the United States, especially vis-a-vis thrift institutions before 1980). The Reserve Banks—nonprofit entities created by an act of Congress and supervised by a government agency, the Board of Governors of the Federal Reserve System—are a case in point. The potential for activities of a Reserve Bank to create conflict of interest with commercial banks is controlled in three ways: by its nonprofit status, by restrictions in its corporate charter (specified in the Federal Reserve Act) and by the oversight of a federal government agency, the Board of Governors of the Federal Reserve System. The most blatant source of potential conflict of interest with the banks that the Fed serves—lending by Reserve Banks to nonbank...
The role as apex of the banking hierarchy puts the central bank in a unique and distinguished position in the payments business.

borrowers—is ruled out (except in emergency conditions) explicitly by charter restriction. And a combination of Reserve Banks' nonprofit status and Board oversight is designed to control conflicts of interest that might arise through the Reserve Banks' discharge of their payments system functions.

This historically oriented description of the function of a central bank in the payments system is consonant with a fast-developing—albeit not yet mature—body of economic theory regarding the function of central banks. Together, history and theory suggest that there are two payments system functions that a central bank is better able than other institutions (except, perhaps, a clearinghouse) to perform for banks. These core central-bank payment functions, which we explain in the story on page 13, are analogous to the core functions that banks provide to their customers.

- A central bank can manage in the broad public interest a system of accounts that all banks are eligible to own, and that they can use to settle interbank transactions.
- By extending credit to banks, a central bank can provide the benefits of interbank payments netting immediate finality of payments.

Its ability to perform these functions and, in particular, its position of neutrality and trust among the public and the institutions that it serves is the unique strength of a central bank as a provider of payment services. From this finding, together with the general principle that the public is best served when each institution in the economy focuses its resources in its area of unique strength, we conclude that these two functions form the core of the services that should continue to be provided directly by the Reserve Banks, and that they should receive the highest strategic priority among the Reserve Banks' activities as providers of payment services.

The Reserve Banks' Role in Providing Other Services

The Reserve Banks' provision of accounts to banks and of final interaccount settlement supported by central-bank credit only partially fulfills the Fed's payments system goal. The Fed has also accepted the role of promoting the efficiency, integrity and accessibility of a broad range of payment services, notably numerous interbank clearing functions, whose good performance depends on more than just access to the Reserve Banks' core payment services. What tools should the Fed use to help assure good outcomes across this full spectrum of payment services?

For some—probably very limited—range of services, efficiency considerations alone may imply that direct service provision by Reserve Banks is the right solution. The provision of these services may be so technologically or institutionally related to the Reserve Banks' core services that it would clearly be much cheaper for the Reserve Banks to provide them in conjunction with their core services than for them to be provided in any other way. In economic terms, provision of these services is said to be complementary to the provision of core services, resulting in positive economies of scope. (See story on page 19 for a more detailed explanation of these concepts and of how they might suggest that the Reserve Banks should provide certain services outside the core.) The range of payment services with high core complementarity is unclear and can be determined only with detailed analysis that is beyond the scope of this essay, but our a priori expectation is that it is narrow.
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Beyond the Reserve Banks’ core services, plus possibly some clearly complementary activities, provision of payment services by the Reserve Banks should be considered as merely one option among many for pursuing the Fed’s goal. We see no reason to presume that payments service provision is the best option. At a minimum, the full range of options discussed above should be analyzed and considered.

In analyzing these options, we would apply both the general and Fed-specific versions of our specialization principle. The general version was elaborated in the previous section. The Fed-specific version involves a general sense of caution about complicating Reserve Bank governance structures or putting the Federal Reserve in the position of encroaching significantly on private-market institutions, as discussed in the introduction. We now apply each specialization principle to the question at hand.

As noted above, the general specialization principle provides a rationale for the Reserve Banks to provide core interbank settlement, accounting and credit functions. However, because we take as given the Fed’s goal of promoting the efficiency, integrity and accessibility of the payments system more broadly, the general specialization principle does not imply that the Reserve Banks should always strictly limit their role as a payments provider to only those core functions. Nevertheless, the general specialization principle does suggest that core functions have the highest claim to be performed directly by the Reserve Banks. The more remotely related to the core a payments system objective is, the stronger are the considerations in favor of using other policy tools to accomplish it.

The Fed-specific benefit of specialization has to do with the Fed’s relationship with the general public and the banking industry. We would argue the Fed was deliberately designed to decentralize central bank policymaking and to minimize the extent of its head-on competition with other financial intermediaries, in order to promote its effectiveness in its core monetary policy and payments system roles. Our argument—that activities that tend to burden Reserve Bank independence or significantly aggravate the problem of direct competition or conflict between the central bank and other financial intermediaries have indirect costs that the Fed should not ignore—applies to core as well as noncore functions to some degree. However, in the case of core functions, there are few competitors and few good alternatives. So the real force of this consideration applies to noncore functions. There we see this consideration tending to rank options such as Reserve Bank service provision or extensive Federal Reserve System regulation lower than less-intrusive options.

Perhaps the most attractive means of meeting the Fed’s goal, when it is available, is to help ensure that private payment markets are contestable. Recall that a contestable market is one in which existing participants always face numerous actual or potential rivals. When a large number of rivals are present in the market, it can be termed competitive, in the usual sense. However, even markets with one or just a few actual participants can still be contestable, provided potential rivals can enter and exit the market without incurring large irretrievable costs in the process. In the absence of sunk costs of entry or exit, existing participants are always competing not only against each other but also against any number of nonparticipants who can enter the market if profits appear abnormally high.

This potential competition promotes socially desirable results in line with the Fed’s payments system goal. Even when only a single firm is actively providing a service, potential competition prevents that provider from setting prices significantly above competitive
By facilitating the adoption of new electronic clearing methods, the Fed could help ensure contestability and consider an orderly withdrawal from its current role as a provider of check clearing services.

Functions Complementary to the Core

An economy of scope exists when there is a technological reason to produce several goods or services jointly rather than separately. For example, since jet fuel, gasoline, heating oil, lubricating oil and so forth are all constituents of petroleum that are gotten by "cracking" the petroleum into the separate constituents of its mixture, there is an economy of scope in operating a refinery. It is obviously better to produce all of these products jointly than to try to produce them separately.

In central banking, there could be an economy of scope between a core function and a payments function outside the core. In such a case, if the central bank performs the core function, the public is well served (other things being equal) by having it perform the additional function as well.

As an example, we are inclined to think that the Fed's Multilateral Settlement Service enables depository institutions to take advantage of an economy of scope between settlement services and risk management services utilizing the Fed's Account Balance Monitoring System (ABMS). The ABMS is a computer system that provides the option to monitor, in real time, the reserve account of a depository institution. This system is used for risk management of Fedwire, the Reserve Banks' real-time gross settlement system for large-value payments. Recently, the Federal Reserve established the Multilateral Settlement Service, which enables check clearinghouses, credit card networks and other entities to use ABMS for risk management of their private (usually net settlement) payment arrangements. Given that the Fed has already built ABMS and is operating it for internal use, and that the incremental cost of granting access to these other entities is small, there is an economy of scope here.

The economy of scope in this central-banking example is much subtler than the one in petroleum refining. In fact, it is typically true that careful statistical analysis is required to document an economy of scope convincingly. When and if such an economy of scope does exist, it provides a prima facie reason for a central bank to expand its payments system activities in a particular, targeted way beyond its core functions.

Even where an economy of scope may demonstrably exist, one must weigh several questions before deciding that central-bank participation in a payments market is the best form of policy. For example, if the economy of scope were an artifact of regulation, then would revising or removing the regulation be preferable to expanding the role of the central bank? Does adoption of new technology (such as movement from paper-based check collection to electronic payments) remove an old economy of scope or create a new one, and, if so, should the range of central-bank activities be adjusted? We emphasize that an economy of scope is a threshold condition for the central bank to examine judiciously whether it ought to undertake an activity outside its core function, and does not alone constitute an open-and-shut case for such activity.
Thoughts on the Fed’s Role in the Payments System

norms. More generally, it spurs existing participants to innovate and adopt efficient new technologies, so as not to be overtaken by a more progressive entrant to the market. For the same reasons, existing participants cannot skimp on the quality and reliability of their services or discriminate among customers to a greater extent than is required for economic efficiency. In other words, contestability disciplines market participants to pursue efficiency, integrity and accessibility of services.

The Fed can, and already does, promote contestability in payment markets. First of all, the Reserve Banks should ensure that when they provide payment services, they do so in a way that does not impede entry or exit in those markets or related payment markets. As was mentioned earlier, the Reserve Banks make their core payment services available to both incumbent providers and potential entrants in various payment services, including some in which the Reserve Banks do not participate directly. As a regulator, the Fed can try to ensure that its regulations do not inadvertently create unnecessary barriers to entry into or exit from payment services markets. Through its oversight of the payments system and its research capabilities, the Fed can also seek to highlight regulatory or institutional entry and exit barriers that are the responsibility of other agencies, institutions or lawmakers. Finally, the Fed can work with the payments industry to facilitate the adoption of new technologies and institutions that ease entry and exit barriers. Possibly the clearest current example would be to facilitate the adoption of technologies and institutional arrangements for electronic check clearing, in order to trivialize the effects that small volumes and long distances can have on check clearing markets for small and remotely located banks. By facilitating the adoption of new electronic clearing methods, the Fed could help ensure contestability and consider an orderly withdrawal from its current role as a provider of check clearing services.

Another potentially effective option for achieving the Fed’s payments system goals is to shift some regulatory or service provision activities to other governmental, nonprofit or cooperative entities whose core functions better suit them for these tasks. For example, the Reserve Banks already utilize the U.S. Postal Service to perform some routine transportation and delivery functions in remote areas, and the Reserve Banks do not directly compete with the mutually owned organizations (such as Visa and MasterCard) that serve as trusted third parties in the credit card payments clearing market. A related option would be for the Reserve Banks to contract with other organizations to provide certain payment functions, using an open bid process and imposing restrictions if necessary to ensure integrity and accessibility. Either way, the Fed would retain its oversight role, as well as the option to enter into direct service provision or impose more extensive regulation if needed (up to the limits of its statutory authority). However, as long as these other entities meet the Fed’s objectives in these markets, the Fed would be free to better focus its resources on its core activities.

The examples above illustrate that the Fed has at least some alternatives to direct service provision for assuring the efficiency, integrity and accessibility of the payments system. Based on the advantages to the Fed of specializing its payments system role, we conclude that the Reserve Banks should provide core interbank settlement services, plus any closely complementary services. Beyond that, the Fed should consider its full range of tools but exercise caution regarding intrusive options such as direct service provision or extensive regulation.
However, as long as these other entities meet the Fed’s objectives in these markets, the Fed would be free to better focus its resources on its core activities.

Some Specific Implications

Here we apply the general conclusions derived in the previous sections to specific choices confronting the Fed at the beginning of the 21st century.

The Fed should continue to provide an interbank funds transfer system of unquestionable strength, quality and efficiency.

There is fairly strong international consensus that central-bank operation of an interbank settlement system directly based on transfers of balances among banks’ reserve accounts is an effective way to ensure the security and integrity of that system of interbank settlement. That is, given the limitations of current technology and that which is likely to be available in the near future, there is thought to be an economy of scope between maintaining reserve accounts and providing funds transfers among those accounts. An interbank settlement system should provide ease of use and fast throughput with impeccable data security, reliability and risk controls. The very high standards for these attributes that are appropriate in the large-value context imply a stronger economy of scope than exists in the retail-payments case.

The Reserve Banks currently meet those standards with their internal network of computers and their specialized hardware and software that allow depository institutions to directly initiate funds transfers, subject to Fed risk controls. Continuing to meet these standards in today’s rapidly evolving technological environment will require an ongoing and well-targeted effort to upgrade hardware and software and retain critical staff. The Fed will need to stay abreast of numerous developments in communications, security and encryption, software and hardware to ensure that its core systems retain their strength and integrity as they evolve to support the emerging products, standards and access channels that the financial sector will demand to achieve efficiency and boost productivity. An uncompromising commitment to ensure both efficiency and strength (security, reliability, etc.) in core interbank settlement services should be the Reserve Banks’ highest payment services priority.

Payment services whose value added stems primarily from payments clearing rather than interbank settlement will generally not be core payment functions of the Reserve Banks.

The Reserve Banks’ involvement in payment services is sometimes held to contribute to the Federal Reserve System’s core central-banking functions, such as monetary policy, banking supervision and financial stabilization. To the extent these arguments are limited to what we have termed core payment services, chiefly interbank settlement services (including provision of short-term credit to facilitate net settlement), they are consistent with our own suggestion here. However, some commentators appear to argue that the Reserve Banks’ provision of a broader array of services, including check clearing and ACH, significantly enhances the Fed’s ability to carry out its central-banking functions.

We are not convinced. Other central banks, such as the Bank of England, appear to have performed their central-banking responsibilities well with no such broad involvement in payment services. While this may in part reflect historical differences in the payment and banking indus-
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tries in these other countries, even in the United States the relevance to central banking of the Reserve Banks’ role in activities such as check clearing has diminished sharply over time. When the Fed was founded, checks constituted the principal means of interbank payment, so check clearing then constituted essentially a core service according to our characterization. Even later, when wire transfers had supplanted checks as the primary tool for direct interbank settlement, checks remained almost the sole form of consumer and small business noncash payment. Through its involvement in check clearing along with wire transfers, the Fed could provide services to almost the entire payments system during periods of banking instability and may also have derived a broad understanding of commercial bank payments activity and an ability to manage failing institutions. These advantages are now diminishing considerably, as payment services organized without direct Reserve Bank participation, such as credit and debit cards, take an increasing share of the payments market and commercial banks’ payments activity. No one suggests that the Reserve Banks need to provide these emerging and maturing payment services in order to conduct monetary policy, stabilize markets or supervise banks, and we believe the same is true for the comparable payment markets the Reserve Banks are already. In light of the great diversity and rapid evolution of modern means of making retail payments, we do not see provision of a handful of those means as an effective way for a central bank to monitor and understand the payments industry. The Fed has, and must have, other ways to do that.

The advantages of having commercial payment intermediaries serve the public in the Reserve Banks’ traditional noncore market niches are likely to increase as electronic payment options expand.

The Reserve Banks historically had a prima facie advantage over commercial banks as a nationwide payment services provider, because banks faced legal and regulatory obstacles to providing a full spectrum of customer services nationwide. Those obstacles no longer exist. The Federal Reserve Banks also specialized historically in providing interbank payment services to banks that were only marginally profitable to serve on a commercial basis because of factors such as location in a sparsely populated area.21 We anticipate that such factors will be of little or no relevance in the electronic payments environment of the future, and that this is a significant reason why the Fed should promote migration to electronic payments.

If these two traditional Reserve Bank market niches diminish as we expect, so will the need for the Reserve Banks to provide nonsettlement payment services that commercial firms are unable or unwilling to replicate. Then the costs that a central bank incurs by competing broadly with commercial banks (including correspondent banks) in various other service lines are likely to become salient.

The Federal Reserve’s policy on its role in the payments system should explicitly recognize promotion of contestable payment markets as a key tactic in the Fed’s pursuit of its payments system goal. At the same time, pursuit of electronic payment technologies should be considered primarily as a means for promoting contestability, rather than as an end in itself or as a direct means of pursuing the Fed’s goals.
As stressed by Board of Governors Vice Chairman Roger Ferguson (1998), promotion of contestable payment markets has become a key Fed tactic. Its status should be formally recognized. Then the Fed would promote a transition to an electronic payments environment that enhances the contestability of payment markets. This would allow the Fed to achieve its payments system goal through greater reliance on private competition, with a reduced role by the Reserve Banks as direct providers of noncore payment services.

*The Fed should give high priority to supporting the Multilateral Settlement System.*

As we reflect on emerging payment trends and the Fed’s payments system priorities, we have come to view the Reserve Banks’ Multilateral Settlement Service as a good example of how a Reserve Bank service can promote contestable markets and improve the payments system overall. The Multilateral Settlement Service, introduced in 1999, makes it simple for a group of any two or more banks to submit a settlement file listing debits and credits to be applied to their accounts at the Fed. The Reserve Banks first process the debits, applying Fedwire-equivalent risk controls to ensure that each paying bank has the funds or authorization to cover the amount debited. Assuming this is the case, the Reserve Banks then process the credits as irrevocable final payments to the receiving institutions, all on the same day that the settlement file was submitted. This service provides low-cost, direct access to same-day interbank settlement for groups (of banks) of any size, without regard to the underlying transactions that generate their mutual debits/credits or any requirement that the underlying transactions be processed or handled by the Reserve Banks. It has the potential to provide a safe, convenient, reliable and efficient means of settling the interbank obligations generated by all forms of emerging commercial payment vehicles. Barriers to entry in the payments clearing market are thereby reduced, because groups of banks can enter a wide range of payments clearing activities in the knowledge that they will not have to also establish their own safe and reliable settlement mechanism. We would make the continued enhancement of the Multilateral Settlement Service a priority for the Fed.

*Federal Reserve market share is not a public policy goal per se.*

Effective competition from private firms may result in a declining payments market share for the Reserve Banks. As long as the Reserve Banks are conducting their business capably, such loss of market share should not be a cause for concern about the efficiency, integrity or accessibility of the payments system. It is often simply a sign that a private firm is currently the more effective form of organization to achieve those results. In the absence of evidence that the Reserve Banks are being supplanted by monopoly or oligopoly providers in a noncontestable market, a decrease in market share should normally be viewed as neutral or positive.
Thoughts on the Fed’s Role in the Payments System

Conclusion

We have noted that the Fed can pursue its payments system goals by several means, and not just by providing payment services directly. We have argued that the Fed should prioritize its activities in the payments system in a way that makes best use of its character as a specialized institution—a central bank—and that most effectively supports its overall mission by de-emphasizing noncore activities that intrude significantly on the private sector. We have drawn several more specific implications from this approach.

Our suggested principles thus countenance a configuration of Reserve Bank payment services that would differ from what exists today. We emphasize that this is a long-term vision. If it were to be adopted, then the transition to it would have to be managed with care and foresight.

This essay has focused on the Reserve Banks’ involvement in the payments system as providers of payment services. In closing, we would draw attention to the numerous other forms of involvement in the payments system that the Fed maintains, apart from its role as a service provider. In fact, when the public thinks about the Fed’s leadership in the payments system, it is largely—and justly—those other forms of leadership that come to mind.

We therefore think the Fed should continue to pursue payments system monitoring and leadership by other means as well. The Fed has traditionally participated with industry, government and academic representatives on initiatives such as the setting of technical standards and the drafting of model payments legislation. It can play a critical role in those efforts by promoting new institutions and technologies that support a safe, reliable and efficient payments system. The Fed’s banking supervision and market stabilization missions require it to understand the functioning of the payments system. To this end, maintaining an ongoing dialogue with payment providers will continue to be essential. Finally, the Fed has contributed to its own understanding and to the making of good public policy toward the payments system through its contributions to basic research in monetary theory, the industrial organization of payment mechanisms and related areas. Maintaining or strengthening this tradition is also likely to become increasingly important.

Endnotes

1 In compliance with the provisions of the Monetary Control Act of 1980, the Reserve Banks price their services to cover costs, including estimates of the taxes and capital costs that their private sector competitors pay. In addition to this fundamental cost recovery discipline, the Federal Reserve System has promulgated policy principles to guide its participation in payment services markets, published as “The Federal Reserve in the Payments System” (the so-called White Paper) in the May 1990 Federal Reserve Bulletin.

2 This rough characterization will suffice for the purposes of this essay. To the reader who wishes to recast our argument in the most explicit and careful form, we recommend the discussion of comparative advantage in any standard text on the economics of international trade.

3 The term “bank” refers broadly in this essay to depository institutions and other financial institutions that, for reasons of public policy, are permitted to hold accounts at the central bank.

4 Evidence is provided by the role of friction with the state banks, and their consequent opposition, in defeating renewal of the charter of the Second Bank of the United States. The actions of the Second Bank of the
United States were lawful, in conformity with sound banking practices, and inspired by defensible considerations of public policy. Nevertheless those actions were bitterly resented because they forestalled some private-sector banks from doing legitimate business. Cf. Catterall (1902), pp. 166, 451.

5 In particular, we regard it as being consistent with the White Paper on the role of the Federal Reserve in the payments system.

6 One such rationale would be fostering the transition to an electronic-based retail payments system, which would already be well under way in the environment that we contemplate. Another rationale would be coping with market failures. We suggest that an electronic system would correct such a market failure or make it addressable by general competition policy, such as antitrust law.

7 In addition, the Committee recommended that the Federal Reserve System play an active role, in conjunction with other payment service providers and users, in enhancing the efficiency of ACH and check clearing services and in framing strategies for moving to the next generation of payment instruments. In 1999, the Payments System Development Committee was established by the Board to help follow up on recommendations of the Rivlin Committee and actively to foster innovation in the payments system, where this is in the public interest.

8 It is true that a number of such commercial networks ultimately rely on Reserve Bank payment services (for example, the Fed ACH) to transfer funds between their members' reserve accounts for final settlement. When the Reserve Banks play such a limited, specialized role in support of payment services in which they do not directly compete, they contribute to the integrity of those services and provide a means to transfer funds among a more inclusive group of participants than might otherwise be cost-effective. By playing this role, the Reserve Banks also enhance competition, because both incumbent service providers and potential entrants have the option to settle on the Reserve Banks' books. In other words, this is an example of the Reserve Banks promoting the Fed's payments system goal by offering an interbank settlement service that supports private payments initiation and clearing.

9 It might be suggested that, in contrast to the way that we treat them here, regulation and direct provision of services are not completely distinct, unrelated alternatives. Indeed some would emphasize that the Reserve Banks' fairly broad participation in markets for payment services makes the Federal Reserve a better informed, and thus more skillful, regulator than it might otherwise be. We agree that there is such a complementarity in principle, but are not convinced that it is important in practice. It has not been recognized as important in other industries such as broadcasting, transportation, and power generation and distribution, where issues of regulation have been studied more intensively than in the payments industry. A strong and complete case for complementarity in the payments industry would therefore have to identify a special feature of the industry that makes it exceptional in this respect. Furthermore, the Fed already serves as an effective regulator of banks that issue credit and debit cards without participating in those markets, and no one regards regulation in this area as deficient on this account.

10 See Montgomery 1994 for a review of much of the relevant literature.

11 Financial economics implies that, absent specific technological complementarities among the activities of several firms, the firms' investors cannot benefit from a merger on the basis of diversification per se. From the investors' perspective, the merger has no advantage over holding a portfolio of the separate firms' securities. (See Myers 1968, 1976.) The organizational studies of which we are aware suggest that specialization is typically advantageous, but also document some instances that are presumed to be exceptions to the general rule—situations in which diversification has seemed to produce efficiencies.

12 The Federal Reserve, like almost all central banks, has the exclusive authority to issue and destroy currency. However, this authority is exercised in coordination with the Treasury and primarily to accommodate the preferences of banks and the public regarding the proportion of total central-bank liabilities that should be outstanding in the form of currency as opposed to banks' balances at the Reserve Banks. For these reasons, we do not consider currency provision in this essay. However, the strategic core might alternatively be defined to include currency provision.
The leading example was the founding of the Bank of England. North and Weingast (1989) study this history and show that the establishment of a central bank greatly benefited England. Sargent and Velde (1995) show the subsequent value of the Bank of England to British public finance during the 18th century. Sargent (1986) provides a set of historical studies of the role of an independent central bank in controlling inflations and hyperinflations in various countries during the 20th century, as well as a theoretical study ("Some unpleasant monetarist arithmetic," co-authored with Neil Wallace) that provides an analytic framework for understanding the historical episodes.

The central bank's function as intermediary between the government and its creditors does imply that the central bank will be a major user of the payments system, but we think that this function should not be a principal ground for it to play a role of strategic leadership in the payments system. Part of the government-finance intermediary role can be for the central bank to manage the making and receiving of payments for the government. This is the fiscal agency responsibility that the Federal Reserve Act assigns to the Reserve Banks. Given the volume of Treasury payments today, this responsibility implies that the Federal Reserve will be among the most intensive users of the payments system. However, the fiscal agency mandate properly involves conservative, cost-effective satisfaction of the government’s direct payment needs. It should not be regarded as authorizing the central bank to provide what would be, in effect, off-budget financing for a broad program of government-sponsored investment in the payments system per se without appropriate budgetary oversight by Congress. (Broaddus and Goodfriend (1996) explains, in the context of the issue of foreign-exchange-market intervention, why central-bank funding of broad Treasury initiatives risks disturbing the institutional balance between the central bank and the government on which control of inflation depends in the long run.) Recent legislation requiring the Treasury to report the value of services it receives from the Federal Reserve helps to address the potential problem of circumventing congressional oversight, but this development does not release the Federal Reserve from responsibility to be circumspect in its role as the government’s fiscal agent.

Goodhart (1988) emphasizes this function.

On this understanding, the central bank occupies a position of comparative advantage regardless of whether account balances there are intrinsically less subject to default than balances held at other banks—a question regarding which there has been long-running debate in monetary history and economics.

Goodhart (1988) examines in detail the concurrent evolution of clearinghouses and central banks. Regarding government oversight, while this may be less prominent in the case of clearinghouses than of central banks, clearinghouses are typically subject to antitrust law and also to prudential supervision (often by the central bank) in cases where issues of systemic risk are judged to exist.

Analogously, many credit unions are members of special jointly owned, government-regulated intermediaries called corporate credit unions.


However, central-bank operation of interbank settlement is not universal. We note above that Switzerland’s SIC system is operated by a private joint venture under central-bank oversight. In addition, the Bank of Canada is a regulator and guarantor of the Large Value Transfer System, and the Bank of England is a co-owner of CHAPS, but neither system is operated directly by the central bank.

Corrigan (1983), pp. 352, 357.

Incidentally, to the credit of the Fed’s financial services staff, the Reserve Banks have consistently recovered costs and generally earned the acclaim of their customers in these difficult-to-serve markets.

A bank that does not have an account of its own at a Reserve Bank can also participate in the Multilateral Settlement Service, provided a bank with a Reserve Bank account agrees to act as its settler by accepting the nonaccount-holding bank’s debits and credits in its Reserve Bank account.

It also significantly facilitates the provision of same-day settlement finality for net settlement arrangements, a longstanding goal of the Fed’s interbank settlement function.
References


January 29, 2001

To the Board of Directors:

The management of the Federal Reserve Bank of Minneapolis is responsible for the preparation and fair presentation of the Statement of Financial Condition, Statement of Income, and Statement of Changes in Capital as of December 31, 2000 (the “Financial Statements”). The Financial Statements have been prepared in conformity with the accounting principles, policies, and practices established by the Board of Governors of the Federal Reserve System and as set forth in the Financial Accounting Manual for the Federal Reserve Banks, and as such, include amounts, some of which are based on judgments and estimates of management.

The management of the Federal Reserve Bank of Minneapolis is responsible for maintaining an effective process of internal controls over financial reporting including the safeguarding of assets as they relate to the Financial Statements. Such internal controls are designed to provide reasonable assurance to management and to the Board of Directors regarding the preparation of reliable Financial Statements. This process of internal controls contain self-monitoring mechanisms, including, but not limited to, divisions of responsibility and a code of conduct. Once identified, any material deficiencies in the process of internal controls are reported to management, and appropriate corrective measures are implemented.

Even an effective process of internal controls, no matter how well designed, has inherent limitations, including the possibility of human error, and therefore can provide only reasonable assurance with respect to the preparation of reliable financial statements.

The management of the Federal Reserve Bank of Minneapolis assessed its process of internal controls over financial reporting including the safeguarding of assets reflected in the Financial Statements, based upon the criteria established in the "Internal Control – Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this assessment, the management of the Federal Reserve Bank of Minneapolis believes that the Federal Reserve Bank of Minneapolis maintained an effective process of internal controls over financial reporting including the safeguarding of assets as they relate to the Financial Statements.

Gary H. Stern, President

James M. Lyon, First Vice President
Report of Independent Accountants

To the Board of Directors of the
Federal Reserve Bank of Minneapolis:

We have examined management's assertion that the Federal Reserve Bank of Minneapolis ("FRB of Minneapolis") maintained effective internal control over financial reporting and the safeguarding of assets as they relate to the Financial Statements as of December 31, 2000, included in the accompanying Management's Assertion.

Our examination was made in accordance with standards established by the American Institute of Certified Public Accountants, and accordingly, included obtaining an understanding of the internal control over financial reporting, testing, and evaluating the design and operating effectiveness of the internal control, and such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion.

Because of inherent limitations in any internal control, misstatements due to error or fraud may occur and not be detected. Also, projections of any evaluation of the internal control over financial reporting to future periods are subject to the risk that the internal control may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, management's assertion that the FRB of Minneapolis maintained effective internal control over financial reporting and over the safeguarding of assets as they relate to the Financial Statements as of December 31, 2000, is fairly stated, in all material respects, based upon criteria described in "Internal Control - Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission.

March 2, 2001
Minneapolis, Minnesota
Federal Reserve Bank of Minneapolis

Financial Statements
for years ended
December 31, 2000
and 1999
Report of Independent Accountants

To the Board of Governors of The Federal Reserve System
and the Board of Directors of The Federal Reserve
Bank of Minneapolis

We have audited the accompanying statements of condition of The Federal Reserve Bank of Minneapolis (the “Bank”) as of December 31, 2000 and 1999, and the related statements of income and changes in capital for the years then ended. These financial statements are the responsibility of the Bank’s management. Our responsibility is to express an opinion on the financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in Note 3, the financial statements were prepared in conformity with the accounting principles, policies, and practices established by the Board of Governors of The Federal Reserve System. These principles, policies, and practices, which were designed to meet the specialized accounting and reporting needs of The Federal Reserve System, are set forth in the “Financial Accounting Manual for Federal Reserve Banks” and constitute a comprehensive basis of accounting other than generally accepted accounting principles.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Bank as of December 31, 2000 and 1999, and results of its operations for the years then ended, on the basis of accounting described in Note 3.

March 2, 2001
Minneapolis, Minnesota
Federal Reserve Bank of Minneapolis

STATMENTS OF CONDITION
(in millions)

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold certificates</td>
<td>$158</td>
<td>$140</td>
</tr>
<tr>
<td>Special drawing rights certificates</td>
<td>30</td>
<td>78</td>
</tr>
<tr>
<td>Coin</td>
<td>33</td>
<td>13</td>
</tr>
<tr>
<td>Items in process of collection</td>
<td>516</td>
<td>599</td>
</tr>
<tr>
<td>Loans to depository institutions</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>U.S. government and federal agency securities, net</td>
<td>2,183</td>
<td>5,787</td>
</tr>
<tr>
<td>Investments denominated in foreign currencies</td>
<td>572</td>
<td>549</td>
</tr>
<tr>
<td>Accrued interest receivable</td>
<td>25</td>
<td>58</td>
</tr>
<tr>
<td>Prepaid expense–Interest on Federal Reserve notes to the U.S. Treasury</td>
<td>31</td>
<td>—</td>
</tr>
<tr>
<td>Bank premises and equipment, net</td>
<td>150</td>
<td>155</td>
</tr>
<tr>
<td>Other assets</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>$3,722</td>
<td>$7,405</td>
</tr>
</tbody>
</table>

**Liabilities and Capital**

<table>
<thead>
<tr>
<th>Liability Type</th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Reserve notes outstanding, net</td>
<td>$1,587</td>
<td>$2,766</td>
</tr>
<tr>
<td>Deposits:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depository institutions</td>
<td>456</td>
<td>482</td>
</tr>
<tr>
<td>Other deposits</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Deferred credit items</td>
<td>451</td>
<td>584</td>
</tr>
<tr>
<td>Interest on Federal Reserve notes due U.S. Treasury</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>Interdistrict settlement account</td>
<td>642</td>
<td>3,050</td>
</tr>
<tr>
<td>Accrued benefit costs</td>
<td>41</td>
<td>38</td>
</tr>
<tr>
<td>Other liabilities</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>$3,189</td>
<td>6,935</td>
</tr>
</tbody>
</table>

**Capital:**

<table>
<thead>
<tr>
<th>Capital Type</th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital paid-in</td>
<td>368</td>
<td>235</td>
</tr>
<tr>
<td>Surplus</td>
<td>165</td>
<td>235</td>
</tr>
<tr>
<td><strong>Total capital</strong></td>
<td>533</td>
<td>470</td>
</tr>
<tr>
<td><strong>Total liabilities and capital</strong></td>
<td>$3,722</td>
<td>$7,405</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
Federal Reserve Bank of Minneapolis

STATEMENTS OF INCOME
(in millions)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interest income:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest on U.S. government and</td>
<td>$197</td>
<td>$320</td>
</tr>
<tr>
<td>federal agency securities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest on investments</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>denominated in foreign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>currencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest on loans to</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>depository institutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total interest income</strong></td>
<td>211</td>
<td>329</td>
</tr>
<tr>
<td><strong>Other operating income:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income from services</td>
<td>46</td>
<td>45</td>
</tr>
<tr>
<td>Reimbursable services to</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>government agencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign currency (losses), net</td>
<td>(51)</td>
<td>(17)</td>
</tr>
<tr>
<td>U.S. Government securities</td>
<td>(1)</td>
<td>—</td>
</tr>
<tr>
<td>(losses), net</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other income</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total other operating income</strong></td>
<td>20</td>
<td>49</td>
</tr>
<tr>
<td><strong>Operating expenses:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries and other benefits</td>
<td>70</td>
<td>65</td>
</tr>
<tr>
<td>Occupancy expense</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Equipment expense</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Assessments by Board of</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Governors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other expenses</td>
<td>43</td>
<td>31</td>
</tr>
<tr>
<td><strong>Total operating expenses</strong></td>
<td>145</td>
<td>129</td>
</tr>
<tr>
<td>**Net income prior to</td>
<td>$86</td>
<td>$249</td>
</tr>
<tr>
<td>distribution**</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Distribution of net income:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dividends paid to member banks</td>
<td>$19</td>
<td>$13</td>
</tr>
<tr>
<td>Transferred to surplus</td>
<td>67</td>
<td>33</td>
</tr>
<tr>
<td>Payments to U.S. Treasury</td>
<td>—</td>
<td>203</td>
</tr>
<tr>
<td>as interest on Federal Reserve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>notes</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total distribution</strong></td>
<td>$86</td>
<td>$249</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
Federal Reserve Bank of Minneapolis

STATEMENTS OF CHANGES IN CAPITAL
for the years ended December 31, 2000, and December 31, 1999
(in millions)

<table>
<thead>
<tr>
<th>Balance at January 1, 1999</th>
<th>Capital Paid-in</th>
<th>Surplus</th>
<th>Total Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4.1 million shares)</td>
<td>$ 202</td>
<td>$ 202</td>
<td>$ 404</td>
</tr>
<tr>
<td>Net income transferred to surplus</td>
<td>—</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Net change in capital stock issued (0.6 million shares)</td>
<td>33</td>
<td>—</td>
<td>33</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Balance at December 31, 1999</th>
<th>Capital Paid-in</th>
<th>Surplus</th>
<th>Total Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4.7 million shares)</td>
<td>$ 235</td>
<td>$ 235</td>
<td>$ 470</td>
</tr>
<tr>
<td>Net income transferred to surplus</td>
<td>—</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Surplus transfer to the U.S. Treasury</td>
<td>—</td>
<td>(137)</td>
<td>(137)</td>
</tr>
<tr>
<td>Net change in capital stock issued (2.7 million shares)</td>
<td>133</td>
<td>—</td>
<td>133</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Balance at December 31, 2000</th>
<th>Capital Paid-in</th>
<th>Surplus</th>
<th>Total Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>(7.4 million shares)</td>
<td>$ 368</td>
<td>$ 165</td>
<td>$ 533</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of these financial statements.
1. ORGANIZATION

The Federal Reserve Bank of Minneapolis ("Bank") is part of the Federal Reserve System ("System") created by Congress under the Federal Reserve Act of 1913 ("Federal Reserve Act") which established the central bank of the United States. The System consists of the Board of Governors of the Federal Reserve System ("Board of Governors") and twelve Federal Reserve Banks ("Reserve Banks"). The Reserve Banks are chartered by the federal government and possess a unique set of governmental, corporate, and central bank characteristics. Other major elements of the System are the Federal Open Market Committee ("FOMC") and the Federal Advisory Council. The FOMC is composed of members of the Board of Governors, the president of the Federal Reserve Bank of New York ("FRBNY") and, on a rotating basis, four other Reserve Bank presidents.

Structure

The Bank and its branch in Helena, Montana, serve the Ninth Federal Reserve District, which includes Minnesota, Montana, North Dakota, South Dakota, and portions of Michigan and Wisconsin. In accordance with the Federal Reserve Act, supervision and control of the Bank is exercised by a Board of Directors. Banks that are members of the System include all national banks and any state chartered bank that applies and is approved for membership in the System.

Board of Directors

The Federal Reserve Act specifies the composition of the Board of Directors for each of the Reserve Banks. Each board is composed of nine members serving three-year terms: three directors, including those designated as Chairman and Deputy Chairman, are appointed by the Board of Governors, and six directors are elected by member banks. Of the six elected by member banks, three represent the public and three represent member banks. Member banks are divided into three classes according to size. Member banks in each class elect one director representing member banks and one representing the public. In any election of directors, each member bank receives one vote, regardless of the number of shares of Reserve Bank stock it holds.

2. OPERATIONS AND SERVICES

The System performs a variety of services and operations. Functions include: formulating and conducting monetary policy; participating actively in the payments mechanism, including large-dollar transfers of funds, automated clearinghouse operations and check processing; distribution of coin and currency; fiscal agency functions for the U.S. Treasury and certain federal agencies; serving as the federal government’s bank; providing short-term loans to depository institutions; serving the consumer and the community by providing educational materials and information regarding consumer laws; supervising bank holding companies and state member banks; and administering other regulations of the Board of Governors. The Board of Governors’ operating costs are funded through assessments on the Reserve Banks.

The FOMC establishes policy regarding open market operations, oversees these operations, and issues authorizations and directives to the FRBNY for its execution of transactions. Authorized transaction types include direct purchase and sale of securities, matched sale-purchase transactions, the purchase of securities under agreements to resell, and the lending of U.S. government securities. The FRBNY is also authorized by the FOMC to hold balances of and to execute spot
and forward foreign exchange and securities contracts in nine foreign currencies, maintain reciprocal currency arrangements ("F/X swaps") with various central banks, and "warehouse" foreign currencies for the U.S. Treasury and Exchange Stabilization Fund ("ESF") through the Reserve Banks.

3. SIGNIFICANT ACCOUNTING POLICIES

Accounting principles for entities with the unique powers and responsibilities of the nation's central bank have not been formulated by the Financial Accounting Standards Board. The Board of Governors has developed specialized accounting principles and practices that it believes are appropriate for the significantly different nature and function of a central bank as compared to the private sector. These accounting principles and practices are documented in the "Financial Accounting Manual for Federal Reserve Banks" ("Financial Accounting Manual"), which is issued by the Board of Governors. All Reserve Banks are required to adopt and apply accounting policies and practices that are consistent with the Financial Accounting Manual.

The financial statements have been prepared in accordance with the Financial Accounting Manual. Differences exist between the accounting principles and practices of the System and generally accepted accounting principles ("GAAP"). The primary differences are the presentation of all security holdings at amortized cost, rather than at the fair value presentation requirements of GAAP, and the accounting for matched sale-purchase transactions as separate sales and purchases, rather than secured borrowings with pledged collateral, as is generally required by GAAP. In addition, the Bank has elected not to present a Statement of Cash Flows. The Statement of Cash Flows has not been included as the liquidity and cash position of the Bank are not of primary concern to the users of these financial statements. Other information regarding the Bank's activities is provided in, or may be derived from, the Statements of Condition, Income, and Changes in Capital. Therefore, a Statement of Cash Flows would not provide any additional useful information. There are no other significant differences between the policies outlined in the Financial Accounting Manual and GAAP.

The preparation of the financial statements in conformity with the Financial Accounting Manual requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates. Unique accounts and significant accounting policies are explained below.

a. Gold Certificates

The Secretary of the Treasury is authorized to issue gold certificates to the Reserve Banks to monetize gold held by the U.S. Treasury. Payment for the gold certificates by the Reserve Banks is made by crediting equivalent amounts in dollars into the account established for the U.S. Treasury. These gold certificates held by the Reserve Banks are required to be backed by the gold of the U.S. Treasury. The U.S. Treasury may reacquire the gold certificates at any time and the Reserve Banks must deliver them to the U.S. Treasury. At such time, the U.S. Treasury's account is charged and the Reserve Banks' gold certificate accounts are lowered. The value of gold for purposes of backing the gold certificates is set by law at $42 2/9 a fine
troy ounce. The Board of Governors allocates the gold certificates among Reserve Banks once a year based upon Federal Reserve notes outstanding in each District at the end of the preceding year.

b. Special Drawing Rights Certificates
Special drawing rights ("SDRs") are issued by the International Monetary Fund ("Fund") to its members in proportion to each member's quota in the Fund at the time of issuance. SDRs serve as a supplement to international monetary reserves and may be transferred from one national monetary authority to another. Under the law providing for United States participation in the SDR system, the Secretary of the U.S. Treasury is authorized to issue SDR certificates, somewhat like gold certificates, to the Reserve Banks. At such time, equivalent amounts in dollars are credited to the account established for the U.S. Treasury, and the Reserve Banks' SDR certificate accounts are increased. The Reserve Banks are required to purchase SDRs, at the direction of the U.S. Treasury, for the purpose of financing SDR certificate acquisitions or for financing exchange stabilization operations. The Board of Governors allocates each SDR transaction among Reserve Banks based upon Federal Reserve notes outstanding in each District at the end of the preceding year.

c. Loans to Depository Institutions
The Depository Institutions Deregulation and Monetary Control Act of 1980 provides that all depository institutions that maintain reservable transaction accounts or nonpersonal time deposits, as defined in Regulation D issued by the Board of Governors, have borrowing privileges at the discretion of the Reserve Banks. Borrowers execute certain lending agreements and deposit sufficient collateral before credit is extended. Loans are evaluated for collectibility, and currently all are considered collectible and fully collateralized. If any loans were deemed to be uncollectible, an appropriate reserve would be established. Interest is recorded on the accrual basis and is charged at the applicable discount rate established at least every fourteen days by the Board of Directors of the Reserve Banks, subject to review by the Board of Governors. However, Reserve Banks retain the option to impose a surcharge above the basic rate in certain circumstances.

d. U.S. Government and Federal Agency Securities and Investments Denominated in Foreign Currencies
The FOMC has designated the FRBNY to execute open market transactions on its behalf and to hold the resulting securities in the portfolio known as the System Open Market Account ("SOMA"). In addition to authorizing and directing operations in the domestic securities market, the FOMC authorizes and directs the FRBNY to execute operations in foreign markets for major currencies in order to counter disorderly conditions in exchange markets or other needs specified by the FOMC in carrying out the System's central bank responsibilities.

Purchases of securities under agreements to resell and matched sale-purchase transactions are accounted for as separate sale and purchase transactions. Purchases under agreements to resell are transactions in which the FRBNY purchases a security and sells it back at the rate specified at the commencement of the transaction. Matched sale-purchase transactions are transactions in which the FRBNY sells a security and buys it back at the rate specified at the commencement of the transaction.
Effective April 26, 1999, FRBNY was given the sole authorization by the FOMC to lend U.S. government securities held in the SOMA to U.S. government securities dealers and to banks participating in U.S. government securities clearing arrangements, in order to facilitate the effective functioning of the domestic securities market. These securities-lending transactions are fully collateralized by other U.S. government securities. FOMC policy requires FRBNY to take possession of collateral in excess of the market values of the securities loaned. The market values of the collateral and the securities loaned are monitored by FRBNY on a daily basis, with additional collateral obtained as necessary. The securities loaned continue to be accounted for in the SOMA. Prior to April 26, 1999, all Reserve Banks were authorized to engage in such lending activity.

Foreign exchange contracts are contractual agreements between two parties to exchange specified currencies, at a specified price, on a specified date. Spot foreign contracts normally settle two days after the trade date, whereas the settlement date on forward contracts is negotiated between the contracting parties, but will extend beyond two days from the trade date. The FRBNY generally enters into spot contracts, with any forward contracts generally limited to the second leg of a swap/warehousing transaction.

The FRBNY, on behalf of the Reserve Banks, maintains renewable, short-term F/X swap arrangements with two authorized foreign central banks. The parties agree to exchange their currencies up to a pre-arranged maximum amount and for an agreed upon period of time (up to twelve months), at an agreed upon interest rate. These arrangements give the FOMC temporary access to foreign currencies that it may need for intervention operations to support the dollar and give the partner foreign central bank temporary access to dollars it may need to support its own currency. Drawings under the F/X swap arrangements can be initiated by either the FRBNY or the partner foreign central bank, and must be agreed to by the drawee. The F/X swaps are structured so that the party initiating the transaction (the drawer) bears the exchange rate risk upon maturity. The FRBNY will generally invest the foreign currency received under an F/X swap in interest-bearing instruments.

Warehousing is an arrangement under which the FOMC agrees to exchange, at the request of the Treasury, U.S. dollars for foreign currencies held by the Treasury or ESF over a limited period of time. The purpose of the warehousing facility is to supplement the U.S. dollar resources of the Treasury and ESF for financing purchases of foreign currencies and related international operations.

In connection with its foreign currency activities, the FRBNY, on behalf of the Reserve Banks, may enter into contracts which contain varying degrees of off-balance sheet market risk because they represent contractual commitments involving future settlement, and counter-party credit risk. The FRBNY controls credit risk by obtaining credit approvals, establishing transaction limits, and performing daily monitoring procedures.

While the application of current market prices to the securities currently held in the SOMA portfolio and investments denominated in foreign currencies may result in values substantially above or below their carrying values, these unrealized changes in value would have no direct effect on the quantity of reserves available to the banking system or on the prospects for future Reserve Bank earnings or capital. Both the domestic and foreign components of the SOMA
portfolio from time to time involve transactions that can result in gains or losses when holdings are sold prior to maturity. However, decisions regarding the securities and foreign currencies transactions, including their purchase and sale, are motivated by monetary policy objectives rather than profit. Accordingly, earnings and any gains or losses resulting from the sale of such currencies and securities are incidental to the open market operations and do not motivate its activities or policy decisions.

U.S. government and federal agency securities and investments denominated in foreign currencies comprising the SOMA are recorded at cost, on a settlement-date basis, and adjusted for amortization of premiums or accretion of discounts on a straight-line basis. Interest income is accrued on a straight-line basis and is reported as “Interest on U.S. government and federal agency securities” or “Interest on investments denominated in foreign currencies,” as appropriate. Income earned on securities lending transactions is reported as a component of “Other income.” Gains and losses resulting from sales of securities are determined by specific issues based on average cost. Gains and losses on the sales of U.S. government and federal agency securities are reported as “U.S. government securities (losses), net.” Foreign currency denominated assets are revalued monthly at current market exchange rates in order to report these assets in U.S. dollars. Realized and unrealized gains and losses on investments denominated in foreign currencies are reported as “Foreign currency (losses), net.” Foreign currencies held through F/X swaps, when initiated by the counter-party, and warehousing arrangements are revalued monthly, with the unrealized gain or loss reported by the FRBNY as a component of “Other assets” or “Other liabilities,” as appropriate.

Balances of U.S. government and federal agency securities bought outright, investments denominated in foreign currency, interest income, amortization of premiums and discounts on securities bought outright, gains and losses on sales of securities, and realized and unrealized gains and losses on investments denominated in foreign currencies, excluding those held under an F/X swap arrangement, are allocated to each Reserve Bank. Effective April 26, 1999, income from securities lending transactions undertaken by FRBNY was also allocated to each Reserve Bank. Securities purchased under agreements to resell and unrealized gains and losses on the revaluation of foreign currency holdings under F/X swaps and warehousing arrangements are allocated to the FRBNY and not to other Reserve Banks.

e. Bank Premises and Equipment
Bank premises and equipment are stated at cost less accumulated depreciation. Depreciation is calculated on a straight-line basis over estimated useful lives of assets ranging from 2 to 50 years. New assets, major alterations, renovations and improvements are capitalized at cost as additions to the asset accounts. Maintenance, repairs and minor replacements are charged to operations in the year incurred. Internally developed software is capitalized based on the cost of direct materials and services and those indirect costs associated with developing, implementing, or testing software.

f. Interdistrict Settlement Account
At the close of business each day, all Reserve Banks and branches assemble the payments due to or from other Reserve Banks and branches as a result of transactions involving accounts residing in other Districts that occurred during the day’s operations. Such transactions may include funds settlement, check clearing and automated clearinghouse operations, and allocations of
shared expenses. The cumulative net amount due to or from other Reserve Banks is reported as the “Interdistrict settlement account.”

g. Federal Reserve Notes
Federal Reserve notes are the circulating currency of the United States. These notes are issued through the various Federal Reserve agents to the Reserve Banks upon deposit with such Agents of certain classes of collateral security, typically U.S. government securities. These notes are identified as issued to a specific Reserve Bank. The Federal Reserve Act provides that the collateral security tendered by the Reserve Bank to the Federal Reserve Agent must be equal to the sum of the notes applied for by such Reserve Bank. In accordance with the Federal Reserve Act, gold certificates, special drawing rights certificates, U.S. government and federal agency securities, triparty agreements, loans to depository institutions, and investments denominated in foreign currencies are pledged as collateral for net Federal Reserve notes outstanding. The collateral value is equal to the book value of the collateral tendered, with the exception of securities, whose collateral value is equal to the par value of the securities tendered. The Board of Governors may, at any time, call upon a Reserve Bank for additional security to adequately collateralize the Federal Reserve notes. The Reserve Banks have entered into an agreement which provides for certain assets of the Reserve Banks to be jointly pledged as collateral for the Federal Reserve notes of all Reserve Banks in order to satisfy their obligation of providing sufficient collateral for outstanding Federal Reserve notes. In the event that this collateral is insufficient, the Federal Reserve Act provides that Federal Reserve notes become a first and paramount lien on all the assets of the Reserve Banks. Finally, as obligations of the United States, Federal Reserve notes are backed by the full faith and credit of the United States government.

The “Federal Reserve notes outstanding, net” account represents Federal Reserve notes reduced by cash held in the vaults of the Bank of $7,994 million and $8,581 million at December 31, 2000 and 1999, respectively.

h. Capital Paid-in
The Federal Reserve Act requires that each member bank subscribe to the capital stock of the Reserve Bank in an amount equal to 6 percent of the capital and surplus of the member bank. As a member bank’s capital and surplus changes, its holdings of the Reserve Bank’s stock must be adjusted. Member banks are those state-chartered banks that apply and are approved for membership in the System and all national banks. Currently, only one-half of the subscription is paid-in and the remainder is subject to call. These shares are nonvoting with a par value of $100. They may not be transferred or hypothecated. By law, each member bank is entitled to receive an annual dividend of 6 percent on the paid-in capital stock. This cumulative dividend is paid semiannually. A member bank is liable for Reserve Bank liabilities up to twice the par value of stock subscribed by it.

i. Surplus
The Board of Governors requires Reserve Banks to maintain a surplus equal to the amount of capital paid-in as of December 31. This amount is intended to provide additional capital and reduce the possibility that the Reserve Banks would be required to call on member banks for additional capital. Reserve Banks are required by the Board of Governors to transfer to the U.S. Treasury excess earnings, after providing for the costs of operations, payment of dividends, and reservation of an amount necessary to equate surplus with capital paid-in.
The Consolidated Appropriations Act of 2000 (Public Law 106-113, Section 302) directed the Reserve Banks to transfer to the U.S. Treasury additional surplus funds of $3,752 million during the Federal Government’s 2000 fiscal year. Federal Reserve Bank of Minneapolis transferred $137 million to the U.S. Treasury during the year ended December 31, 2000. Reserve Banks were not permitted to replenish the surplus for these amounts during fiscal year 2000 which ended September 30, 2000.

Due to the substantial increase in capital paid-in and the transfer of surplus required by the Consolidated Appropriations Act of 2000, surplus was not equated to capital at December 31, 2000. The amount of additional surplus required due to these events exceeded the Bank’s net income in 2000. Net income is affected by SOMA participation as discussed in footnote 4.

In the event of losses or a substantial increase in capital, payments to the U.S. Treasury are suspended until such losses or increases in capital are recovered through subsequent earnings. At year end, the Bank’s payments had not resumed. Payments made to the U.S. Treasury earlier in the year are classified as “Prepaid expense–Interest on Federal Reserve notes to the U.S. Treasury.” Weekly payments to the U.S. Treasury may vary significantly.

j. Income and Costs related to Treasury Services
The Bank is required by the Federal Reserve Act to serve as fiscal agent and depository of the United States. By statute, the Department of the Treasury is permitted, but not required, to pay for these services. The costs of providing fiscal agency and depository services to the Treasury Department that have been billed but will not paid are immaterial and included in “Other Expenses.”

k. Taxes
The Reserve Banks are exempt from federal, state, and local taxes, except for taxes on real property, which are reported as a component of “Occupancy expense.”

4. U.S. GOVERNMENT AND FEDERAL AGENCY SECURITIES
Securities bought outright are held in the SOMA at the FRBNY. An undivided interest in SOMA activity, with the exception of securities held under agreements to resell and the related premiums, discounts and income, is allocated to each Reserve Bank on a percentage basis derived from an annual settlement of interdistrict clearings. The settlement, performed in April of each year, equalizes Reserve Bank gold certificate holdings to Federal Reserve notes outstanding. The Bank’s allocated share of SOMA balances was 0.421 percent and 1.196 percent at December 31, 2000 and 1999, respectively.
The Bank's allocated share of securities held in the SOMA at December 31, that were bought outright, were as follows (in millions):

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal agency</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>U.S. government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bills</td>
<td>752</td>
<td>2,111</td>
</tr>
<tr>
<td>Notes</td>
<td>1,011</td>
<td>2,613</td>
</tr>
<tr>
<td>Bonds</td>
<td>391</td>
<td>992</td>
</tr>
<tr>
<td>Total par value</td>
<td>2,155</td>
<td>5,718</td>
</tr>
<tr>
<td>Unamortized premiums</td>
<td>41</td>
<td>109</td>
</tr>
<tr>
<td>Unaccreted discounts</td>
<td>(13)</td>
<td>(40)</td>
</tr>
<tr>
<td>Total allocated to Bank</td>
<td>$ 2,183</td>
<td>$ 5,787</td>
</tr>
</tbody>
</table>

Total SOMA securities bought outright were $518,501 million and $483,902 million at December 31, 2000 and 1999, respectively.

The maturity distribution of U.S. government and federal agency securities bought outright, which were allocated to the Bank at December 31, 2000, were as follows (in millions):

<table>
<thead>
<tr>
<th>Maturities of Securities Held</th>
<th>U.S. Government</th>
<th>Federal Agency</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within 15 days</td>
<td>$76</td>
<td>$</td>
<td>$76</td>
</tr>
<tr>
<td>16 days to 90 days</td>
<td>459</td>
<td></td>
<td>459</td>
</tr>
<tr>
<td>91 days to 1 year</td>
<td>528</td>
<td></td>
<td>528</td>
</tr>
<tr>
<td>Over 1 year to 5 years</td>
<td>559</td>
<td>1</td>
<td>560</td>
</tr>
<tr>
<td>Over 5 years to 10 years</td>
<td>233</td>
<td></td>
<td>233</td>
</tr>
<tr>
<td>Over 10 years</td>
<td>299</td>
<td></td>
<td>299</td>
</tr>
<tr>
<td>Total</td>
<td>$2,154</td>
<td>$1</td>
<td>$2,155</td>
</tr>
</tbody>
</table>

At December 31, 2000 and 1999, matched sale-purchase transactions involving U.S. government securities with par values of $21,112 million and $39,182 million, respectively, were outstanding, of which $89 million and $469 million were allocated to the Bank. Matched sale-purchase transactions are generally overnight arrangements.
5. INVESTMENTS DENOMINATED IN FOREIGN CURRENCIES

The FRBNY, on behalf of the Reserve Banks, holds foreign currency deposits with foreign central banks and the Bank for International Settlements and invests in foreign government debt instruments. Foreign government debt instruments held include both securities bought outright and securities held under agreements to resell. These investments are guaranteed as to principal and interest by the foreign governments.

Each Reserve Bank is allocated a share of foreign-currency-denominated assets, the related interest income, and realized and unrealized foreign currency gains and losses, with the exception of unrealized gains and losses on F/X swaps and warehousing transactions. This allocation is based on the ratio of each Reserve Bank’s capital and surplus to aggregate capital and surplus at the preceding December 31. The Bank’s allocated share of investments denominated in foreign currencies was approximately 3.653 percent and 3.400 percent at December 31, 2000 and 1999, respectively.

The Bank’s allocated share of investments denominated in foreign currencies, valued at current exchange rates at December 31, were as follows (in millions):

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>European Union Euro:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign currency deposits</td>
<td>$169</td>
<td>$147</td>
</tr>
<tr>
<td>Government debt instruments including agreements to resell</td>
<td>100</td>
<td>86</td>
</tr>
<tr>
<td><strong>Japanese Yen:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign currency deposits</td>
<td>100</td>
<td>11</td>
</tr>
<tr>
<td>Government debt instruments including agreements to resell</td>
<td>201</td>
<td>303</td>
</tr>
<tr>
<td><strong>Accrued interest</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$572</td>
<td>$549</td>
</tr>
</tbody>
</table>

Total investments denominated in foreign currencies were $15,670 million and $16,140 million at December 31, 2000 and 1999, respectively.
The maturity distribution of investments denominated in foreign currencies which were allocated to the Bank at December 31, 2000, were as follows (in millions):

<table>
<thead>
<tr>
<th>Maturities of Investments Denominated in Foreign Currencies</th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within 1 year</td>
<td>$ 537</td>
<td></td>
</tr>
<tr>
<td>Over 1 year to 5 years</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Over 5 years to 10 years</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Over 10 years</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$ 572</td>
<td></td>
</tr>
</tbody>
</table>

At December 31, 2000 and 1999, there were no open foreign exchange contracts or outstanding F/X swaps.

At December 31, 2000 and 1999, the warehousing facility was $5,000 million, with no balance outstanding.

6. BANK PREMISES AND EQUIPMENT
A summary of bank premises and equipment at December 31 is as follows (in millions):

<table>
<thead>
<tr>
<th>Bank premises and equipment:</th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>$ 13</td>
<td>$ 13</td>
</tr>
<tr>
<td>Buildings</td>
<td>110</td>
<td>109</td>
</tr>
<tr>
<td>Building machinery and equipment</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Furniture and equipment</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>185</td>
<td>184</td>
</tr>
<tr>
<td>Accumulated depreciation</td>
<td>(35)</td>
<td>(29)</td>
</tr>
<tr>
<td>Bank premises and equipment, net</td>
<td>$ 150</td>
<td>$ 155</td>
</tr>
</tbody>
</table>

Depreciation expense was $9 million and $8 million for the years ended December 31, 2000 and 1999, respectively.

This Bank has not entered into any capitalized leases for bank premises and equipment.

Future minimum payments under agreements in existence at December 31, 2000, were not material.
7. COMMITMENTS AND CONTINGENCIES
Future minimum rental payments under noncancelable operating leases and capital leases, net of sublease rentals, with terms of one year or more, at December 31, 2000, were not material.

Rental expense under operating leases for certain operating facilities, warehouses, and data processing and office equipment (including taxes, insurance and maintenance when included in rent), net of sublease rentals, was $255 thousand and $271 thousand for the years ended December 31, 2000 and 1999, respectively. Certain of the Bank’s leases have options to renew.

Under the Insurance Agreement of the Federal Reserve Banks dated as of March 2, 1999, each of the Reserve Banks has agreed to bear, on a per incident basis, a pro rata share of losses in excess of 1 percent of the capital paid-in of the claiming Reserve Bank, up to 50 percent of the total capital paid-in of all Reserve Banks. Losses are borne in the ratio that a Reserve Bank’s capital paid-in bears to the total capital paid-in of all Reserve Banks at the beginning of the calendar year in which the loss is shared. No claims were outstanding under such agreement at December 31, 2000 or 1999.

The Bank is involved in certain legal actions and claims arising in the ordinary course of business. Although it is difficult to predict the ultimate outcome of these actions, in management’s opinion, based on discussions with counsel, the aforementioned litigation and claims will be resolved without material adverse effect on the financial position or results of operations of the Bank.

There were no other commitments and long-term obligations in excess of one year at December 31, 2000.

8. RETIREMENT AND THRIFT PLANS
Retirement Plans
The Bank currently offers two defined benefit retirement plans to its employees, based on length of service and level of compensation. Substantially all of the Bank’s employees participate in the Retirement Plan for Employees of the Federal Reserve System (“System Plan”) and the Benefit Equalization Retirement Plan (“BEP”). The System Plan is a multi-employer plan with contributions fully funded by participating employers. No separate accounting is maintained of assets contributed by the participating employers. The Bank’s projected benefit obligation and net pension costs for the BEP at December 31, 2000 and 1999, and for the years then ended, are not material.

Thrift Plan
Employees of the Bank may also participate in the defined contribution Thrift Plan for Employees of the Federal Reserve System (“Thrift Plan”). The Bank’s Thrift Plan contributions totaled $2 million for each of the years ended December 31, 2000 and 1999, and are reported as a component of “Salaries and other benefits.”
9. POSTRETIREMENT BENEFITS OTHER THAN PENSIONS
   AND POSTEMPLOYMENT BENEFITS

Postretirement benefits other than pensions
In addition to the Bank's retirement plans, employees who have met certain age and length of
service requirements are eligible for both medical benefits and life insurance coverage during
retirement.

The Bank funds benefits payable under the medical and life insurance plans as due and, accord­
ingly, has no plan assets. Net postretirement benefit costs are actuarially determined using a
January 1 measurement date.

Following is a reconciliation of beginning and ending balances of the benefit obligation (in
millions):

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accumulated postretirement benefit obligation at January 1</td>
<td>$ 30.3</td>
<td>$ 30.2</td>
</tr>
<tr>
<td>Service cost-benefits earned during the period</td>
<td>0.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Interest cost of accumulated benefit obligation</td>
<td>2.2</td>
<td>1.9</td>
</tr>
<tr>
<td>Actuarial loss (gain)</td>
<td>1.1</td>
<td>(1.6)</td>
</tr>
<tr>
<td>Contributions by plan participants</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Benefits paid</td>
<td>(1.4)</td>
<td>(1.3)</td>
</tr>
<tr>
<td>Accumulated postretirement benefit obligation at December 31</td>
<td>$ 33.2</td>
<td>$ 30.3</td>
</tr>
</tbody>
</table>

Following is a reconciliation of the beginning and ending balance of the plan assets, the
unfunded postretirement benefit obligation, and the accrued postretirement benefit costs (in
millions):

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair value of plan assets at January 1</td>
<td>$ —</td>
<td>$ —</td>
</tr>
<tr>
<td>Actual return on plan assets</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Contributions by the employer</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Contributions by plan participants</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Benefits paid</td>
<td>(1.3)</td>
<td>(1.3)</td>
</tr>
<tr>
<td>Fair value of plan assets at December 31</td>
<td>$ —</td>
<td>$ —</td>
</tr>
<tr>
<td>Unfunded postretirement benefit obligation</td>
<td>$ 33.2</td>
<td>$ 30.3</td>
</tr>
<tr>
<td>Unrecognized initial net transition asset (obligation)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Unrecognized prior service cost</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Unrecognized net actuarial gain</td>
<td>1.8</td>
<td>2.9</td>
</tr>
<tr>
<td>Accrued postretirement benefit cost</td>
<td>$ 35.0</td>
<td>$ 33.2</td>
</tr>
</tbody>
</table>
Accrued postretirement benefit costs are reported as a component of “Accrued benefit costs.”

At December 31, 2000 and 1999, the weighted-average assumption used in developing the postretirement benefit obligation was 7.5 percent.

For measurement purposes, an 8.75 percent annual rate of increase in the cost of covered health care benefits was assumed for 2001. Ultimately, the health care cost trend rate is expected to decrease gradually to 5.50 percent by 2008, and remain at that level thereafter.

Assumed health care cost trend rates have a significant effect on the amounts reported for health care plans. A one percentage point change in assumed health care cost trend rates would have the following effects for the year ended December 31, 2000 (in millions):

<table>
<thead>
<tr>
<th>Effect on aggregate of service and interest cost components of net periodic postretirement benefit costs</th>
<th>1 Percentage Point Increase</th>
<th>1 Percentage Point Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect on accumulated postretirement benefit obligation</td>
<td>$ 0.8</td>
<td>$ (0.6)</td>
</tr>
</tbody>
</table>

The following is a summary of the components of net periodic postretirement benefit costs for the years ended December 31 (in millions):

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service cost-benefits earned during the period</td>
<td>$ 0.9</td>
<td>$ 1.0</td>
</tr>
<tr>
<td>Interest cost of accumulated benefit obligation</td>
<td>2.2</td>
<td>1.9</td>
</tr>
<tr>
<td>Amortization of prior service cost</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Recognized net actuarial loss</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Net periodic postretirement benefit costs</td>
<td>$ 3.1</td>
<td>$ 2.9</td>
</tr>
</tbody>
</table>

Net periodic postretirement benefit costs are reported as a component of “Salaries and other benefits.”

Postemployment benefits
The Bank offers benefits to former or inactive employees. Postemployment benefit costs are actuarially determined and include the cost of medical and dental insurance, survivor income, and disability benefits. Costs were projected using the same discount rate and health care trend rates as were used for projecting postretirement costs. The accrued postemployment benefit costs recognized by the Bank at December 31, 2000 and 1999, were $6 million and $5 million, respectively. This cost is included as a component of “Accrued benefit costs.” Net periodic postemployment benefit costs included in 2000 and 1999 operating expenses were $1 million for each year.
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James J. Howard
Chairman

Ronald N. Zwieg
Deputy Chairman

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MEMBER BANKS

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President and Chief Executive Officer
Dakota Western Bank
Bowman, N.D.

W. W. LaJoie
Chairman and Chief Executive Officer
Central Savings Bank

Bruce Parker
President
Wells Fargo Bank Montana, NA
Billings, Mont.

CLASS B ELECTED BY
MEMBER BANKS

Jay F. Hoeschler
President
Hoeschler Realty Corp.
La Crosse, Wis.

Kathryn L. Ogren
Owner
Bitterroot Motors Inc.
Missoula, Mont.

Rob L. Wheeler
Vice President and Sales Manager
Wheeler Manufacturing Co. Inc.
Lemmon, S.D.

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BOARD OF GOVERNORS

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Xcel Energy Inc.
Minneapolis, Minn.

Linda Hall Whitman
President
Ceridian Performance Partners
Minneapolis, Minn.

Ronald N. Zwieg
President
United Food and Commercial Workers Local 653
Plymouth, Minn.

Seated (from left):
Roger Berglund,
Linda Hall Whitman,
Rob Wheeler,
James Howard;
standing (from left):
Jay Hoeschler,
W.W. LaJoie,
Ronald Zwieg,
Bruce Parker,
Kathryn Ogren
2000 Helena Branch Board of Directors

William P. Underriner
Chairman

Thomas O. Markle
Vice Chairman

APPOINTED BY THE BOARD OF GOVERNORS

Thomas O. Markle
President
Markle's Inc.
Glasgow, Mont.

William P. Underriner
General Manager
Selover Buick Inc.
Billings, Mont.

APPOINTED BY THE MINNEAPOLIS BOARD OF DIRECTORS

Emil W. Erhardt
President
Citizens State Bank
Hamilton, Mont.

Richard E. Hart
President
Mountain West Bank
Great Falls, Mont.

Sandra M. Stash
General Manager,
Chemicals, OBC & Upstream Operations
ARCO Environmental Remediation L.L.C.
Anaconda, Mont.

Seated (from left):
William Underriner,
Thomas Markle;
Standing (from left):
Emil Erhardt,
Richard Hart,
Sandra Stash

FEDERAL ADVISORY COUNCIL MEMBER

R. Scott Jones
President and Chief Executive Officer
Signal Financial Corp.
Mendota Heights, Minn.

April 2001
Advisory Council on Small Business, Agriculture and Labor

Rob L. Wheeler, Chairman
Vice President and Sales Manager
Wheeler Manufacturing Co. Inc.
Lemmon, S.D.

Terry Anderson
President
Anderson Chemical Co.
Litchfield, Minn.

Howard A. Dahl
President
Amity Technology LLC
Fargo, N.D.

John T. Forkan Jr.
Business Manager
Plumbers and Pipefitters Local 141
Butte, Mont.

Carrie Holmen
Rancher
Billings, Mont.

Karl Murch
Chief Financial Officer
Encor Technologies Inc.
Eau Claire, Wis.

Donald C. Peterson
Owner
Yaggie's Inc.
Yankton, S.D.

Kathryn J. Polansky
President
Shorebank BIDCO
Marquette, Mich.

Jeanne M. Voigt
President
MindWare
Roseville, Minn.

Seated (from left): Howard Dahl, Karl Murch, Carrie Holmen, Rob Wheeler; standing (from left): Jeanne Voigt, Donald Peterson, Kathryn Polansky
Federal Reserve Bank of Minneapolis

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President

James M. Lyon  
First Vice President

Sheldon L. Azine  
Senior Vice President and General Counsel

Scott H. Dake  
Senior Vice President

Creighton R. Fricek  
Senior Vice President and Corporate Secretary

Arthur J. Rolnick  
Senior Vice President and Director of Research

Theodore E. Umhoefer Jr.  
Senior Vice President

Niel D. Willardson  
Senior Vice President

Michael Garrett  
Vice President

Linda M. Gilligan  
General Auditor

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Vice President

Ronald O. Hostad  
Vice President

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Vice President

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Vice President

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Vice President

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Vice President

Preston J. Miller  
Vice President and Monetary Advisor

Kinney G. Misterek  
Vice President

H. Fay Peters  
Vice President

Susan K. Rossbach  
Vice President and Deputy General Counsel

Julie L. Stackhouse  
Vice President

Thomas M. Supel  
Vice President

Claudia S. Swendseid  
Vice President

Richard M. Todd  
Vice President

Thomas H. Turner  
Vice President

Warren E. Weber  
Senior Research Officer

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Assistant Vice President

Duane Carter  
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Ron J. Feldman  
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Assistant Vice President and Director of Public Affairs

Jean C. Garrick  
Assistant Vice President

Peter J. Gavin  
Assistant Vice President

JoAnne F. Lewellen  
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Richard W. Puttin  
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Assistant Vice President

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Research Officer

Kenneth C. Theisen  
Assistant Vice President

Cheryl Venable  
Assistant Vice President

John E. Yanish  
Assistant Vice President and Assistant General Counsel