



The May 1998 Senior Financial Officer Survey

In recent years, the reserve market and payment system have undergone significant structural changes.¹ In the reserve market, the proliferation of retail sweep accounts at banks has led to a dramatic decline in the level of balances that banks must maintain at the Federal Reserve in order to meet reserve requirements. Indeed, many institutions are now able to satisfy their reserve requirement entirely with vault cash. In the past, low levels of required reserve balances have been associated with increased volatility in the federal funds rate. But the federal funds rate has not been especially volatile lately, in part because banks have adapted to the current low required reserve environment by modifying their reserve management practices, though a significant number report persisting difficulties in managing their positions.² Important changes in the payment system have been: (i) the imposition of charges for so-called "daylight overdraft" credit that is extended when depositories overdraw their Fed account during the course of the business day; and (ii) the recent extension of operating hours for both Fedwire and CHIPS.

To obtain information on the effects of these developments, the Federal Reserve conducted a survey of senior financial officers of large commercial banks in May 1998.³ This document summarizes the findings of that survey. The survey questions and tabulations of the responses are included in Appendix A, a glossary of terms is given in Appendix B, and examples of key reserve concepts are discussed in Appendix C.

Part I: Effects of Recent Changes in Bank Reserves

Part I of the survey included questions covering three basic areas--the impact of low required reserve balances on bank reserve management practices, recent changes in banks' behavior in the federal funds market, and changes in banks' attitudes toward the discount window.

Low Required Fed Account Balances and Bank Reserve Management Practices (Questions 1-4)

Question 1 was aimed at determining the added degree of difficulty that

bank funding managers have faced in managing their reserve position in light of the lower required reserve balances (henceforth, required Fed account balances).⁴ Most of the respondents reported that their levels of required Fed account balances had indeed fallen over the last two years. About one-third of these institutions reported that the reduction in their average level of required Fed account balances had not caused them any increased difficulties in reserve management. Another one-quarter noted that they had initially experienced some difficulties in reserve management associated with low required Fed account balances, but also that they had been able to overcome these difficulties through changes in their reserve management practices. A significant number of banks said that their low level of required Fed account balances had presented some problems and that they still found reserve management more difficult today than in the past.

Respondents noted several ways in which reserve management had become more complicated (question 3). A number of respondents said that low required Fed account balances had reduced the usefulness of reserve carryover provisions. The Federal Reserve's Regulation D permits depositories to carry forward surpluses or deficiencies in their reserve position up to 4 percent of the sum of their total reserve requirement and clearing balance requirement. The carryover provisions allow an institution to benefit from a large surplus carried in from a previous maintenance period by reducing the level of reserves it holds in the current maintenance period. But if an institution satisfies a large portion of its reserve requirement with vault cash, it is possible that its maximum carryover allowance could be large in magnitude relative to its required Fed account balance. In this case, it may not be able to lower its Fed account balance much in order to take advantage of a large surplus carried in because doing so would entail very high risks of incurring an overnight overdraft.

In a similar vein, many respondents noted that low required Fed account balances had sometimes made it difficult to benefit fully from positive "as-of adjustments." Ordinarily, an institution can benefit from such adjustments--which are used as a means of compensating banks for accounting or float-related corrections--by lowering the level of its Fed account balance. Again, for an institution with very low required Fed account balances, reducing its Fed account balance to take advantage of a positive as-of adjustment may not be possible because of the heightened risk of overnight overdrafts as Fed account balances decline.

One way in which banks have responded to such difficulties over time has been to increase their clearing balance requirement at the Federal Reserve. Balances held to satisfy this requirement earn implicit interest in the form of earnings credits that can be used to defray charges for Federal

Reserve priced services.⁵ Although total clearing balance requirements have risen considerably during the 1990s, in the past year the aggregate level of clearing balances has not increased. Many institutions may now be in a position in which further increases in their clearing balance requirement would not be profitable. Indeed, many of the respondents noted that they were not able to increase their clearing balance requirement much because the current level of their requirements already generates earnings credits sufficient to cover their typical priced services charges. Ten assigned a rating of "5" (very significant) to this factor and another five rated it a "4" (described in this summary as "significant"); nine more assigned a rating of "3" (described here as "moderately important").

Another significant reserve management difficulty noted by respondents concerns the treatment of carryover for banks that fully satisfy their reserve requirement with vault cash--so-called "nonbound" institutions.⁶ With the proliferation of retail sweep accounts, many depository institutions now fall in this category, including a number of large institutions. Such institutions may still hold an excess Fed account balance or open a clearing balance account in order to facilitate payments through their Fed account, but these institutions are not eligible for carryover, and this situation obviously limits their flexibility in managing reserve balances across maintenance periods. About one-third of the respondents rated this as a significant or very significant factor complicating reserve management, and for another one-fifth or so it is apparently a moderately important consideration.

Another complication for nonbound institutions is that the effective return they earn on balances held to meet clearing balance requirements is lowered.⁷ As a result, they have reduced incentives to expand their clearing balance requirement. Indeed, anecdotal reports suggest that some larger banks have chosen to reduce their clearing balance requirement after they had become nonbound. A total of nine institutions rated this as a significant or very significant factor complicating reserve management, and for another six it is a moderately important factor.

To the extent that the various reserve management complications noted above have impaired banks' ability to arbitrage in the federal funds market across days in the maintenance period or between maintenance periods, one might expect to see some pickup in the daily volatility of the federal funds rate. For example, federal funds rate volatility increased substantially in early 1991 when required Fed account balances had fallen very low in the wake of the cut in reserve requirements in late 1990 and early 1991 (and subsequently returned to prior typical levels).⁸ On balance over the last few years, however, there has not been much of a pickup in funds rate volatility. In part, the lack of substantial increase in

volatility may reflect the fact that banks' reserve management practices have evolved over time. For example, respondents cited improvements in their automated systems and increases in the level of their clearing balance requirements (question 2) as two important ways in which they had responded to the reserve management complications associated with low required Fed account balances. The practices of the Federal Reserve in supplying reserves through open market operations have also evolved in the last two years. In addition to the usual focus on supplying an appropriate quantity of reserves on average over the maintenance period, there is now an increased emphasis on estimating and meeting reserve needs on each day of the maintenance period, in part through enhanced reliance by the domestic Trading Desk on overnight--as opposed to term--repurchase agreements.

A number of respondents also noted that low required Fed account balances had caused them to change their general reserve management strategy within a maintenance period (question 4). For example, many institutions reported that they had shifted toward a strategy of "running short" on reserves for much of the maintenance period and then holding relatively large reserve positions on the last days of the period in order to meet reserve requirements. (The Board permits banks to meet their reserve requirements on average over a two-week maintenance period.) Given the concerns that respondents had noted in question 3 about the reduced usefulness of reserve carryover provisions, these responses seem quite sensible. An institution that builds up a large cumulative reserve surplus early in the period runs the risk that it will not be able to reduce that position in the last days of the period. In some cases, institutions can become "locked in" to a surplus position in the sense that they would need to run overdrafts in their Fed accounts on the last day or two of the period in order to eliminate an accumulated surplus. As noted in the responses to question 3, even if such a surplus could be carried forward, a bank might not be able to make effective use of the carryover in the subsequent maintenance period.

Over the latter half of 1997, the aggregate level of excess reserves banks wished to hold seemed to increase substantially. One hypothesis had been that this trend might be the result of depositories holding a larger cushion of excess reserves to reduce the possibility of overdrafts as their level of required Fed account balances fell. Two banks on the survey indicated that they had indeed increased their desired level of excess Fed account balances for this reason (question 2), but most respondents did not report a significant increase in their desired excess reserves.

Daily Funding Strategies (Questions 5-7)

These survey questions looked at how banks' intraday behavior in the federal funds market on both "typical days" and "volatile days" might have been affected by declines in required Fed account balances. In part, these questions were motivated by an increased number of instances in which federal funds have traded quite firm early in the day but ended the day on a softer note. Such situations have seemed often to coincide with particular events that can generate sizable payment flows through reserve accounts, including, for example, settlements for two- and five-year Treasury note auctions, maintenance period ends, quarter-ends, corporate tax dates and so forth. One might expect that the larger volume of payment flows on these days would create heightened uncertainties for banks about their end-of-day reserve positions and, perhaps, that such increased uncertainty about end-of-day reserve conditions might lead some banks to be willing to pay a premium in the federal funds market early in the day to line up their funding early.

Banks reported in question 5.1 that there was little difference between typical days and volatile days in terms of how likely they were to be on the buy or sell side in the federal funds market. Similarly, respondents in question 5.2 reported little difference in their pattern of federal funds transactions over the course of a typical day versus that over the course of a volatile day. Perhaps the premium usually observed in the funds rate on such days is sufficient to deter the surveyed banks from trying to move their fed funds purchases earlier in the day.

Responses to question 5.3 indicated that over the last two years, there has been a marked tendency for trades of federal funds to be more concentrated toward the end of the day. In question 6, banks reported that deliveries had become more heavily weighted toward the end of the day in the last two years as well. Banks said that on both typical and volatile days, more than 60 percent of their federal funds purchased were not delivered to their account until after 4 p.m. and that roughly 20 percent were not delivered until after 6 p.m.

It seems plausible that the shift in federal funds market transactions toward late in the day might, in part, reflect the combined effects of low required Fed account balances and payment system risk policies such as charges for daylight overdraft credit and monitoring of intraday credit usage against daylight overdraft caps. With a smaller cushion of Fed account balances, institutions might have a greater incentive to hold on to their federal funds purchased from the previous day as long as possible in order to guard against daylight overdraft charges and cap breaches. This behavior on the part of federal funds buyers, in turn, might lead sellers of funds to be more cautious in committing to transactions early in the day until they are sure that funds lent on the previous day will be returned.

Given that most federal funds deliveries seem to be made quite late in the day, question 7 inquired about banks' need and ability to arrange for an expedited delivery of federal funds if necessary. Most banks reported that they either almost never have a need for an expedited delivery of federal funds or that they are almost never able to arrange such a delivery. However, several banks reported that they are either sometimes or frequently able to arrange such early deliveries. Not surprisingly, these banks reported that they typically have to pay a premium of a few basis points to arrange an early delivery. Presumably, the maximum premium that a bank would be willing to pay for an early delivery of federal funds would be a fraction of the Federal Reserve's fee for daylight overdraft credit. For example, the maximum premium that a two-hour early delivery of federal funds purchased should be worth would be the current daylight overdraft fee of 36 basis points multiplied by 1/12 (2 hrs/24 hrs per day) or about 3 basis points. Conceivably, an institution might be willing to pay more than this for an early delivery if it were especially concerned about the potential for a daylight overdraft cap breach and the associated nonpecuniary penalties.

Attitudes Toward the Discount Window (Question 8)

In principle, the discount window should play an important role in helping the money market adapt to day-to-day imbalances in reserve supply and demand. However, beginning in the mid-1980s, banks appeared to become quite reluctant to turn to the discount window out of concerns that it would be perceived by regulators and others as a sign of financial weakness.⁹ As noted in the May 1996 Senior Financial Officer Survey, many banks remained concerned that discount officers, federal regulators, and market participants would view turning to the discount window as a sign of distress.

One might have expected the recent strength in the economy and banking system to help dispel fears about usage of the discount window. In addition, the Federal Reserve, in its communications with banks, has noted that the discount window is available in appropriate circumstances to meet unexpected funding needs.¹⁰ These factors probably help to explain the responses to question 8. About one-third of the banks reported that they had become either somewhat or considerably more willing to borrow from the discount window over the last two years, and none indicated that they had become less willing to borrow. Of those that indicated an increased willingness to borrow, most reported that they had become less concerned that the Federal Reserve and other federal regulators might view borrowing negatively, and a number reported that they had become less concerned that the market would view borrowing as a sign of weakness.

Part II: Effects of Possible Changes in Reserve Market Structure

Part II of the survey focused on banks' hypothetical responses to various proposed and imminent changes in reserve market structure. The first set of questions asked banks to consider the potential effects if the Federal Reserve were allowed by statute to pay interest on Fed account balances applied against reserve requirements or on excess Fed account balances. In addition, banks were asked about their likely response if the Federal Reserve were allowed to pay interest on reserves and if they could pay explicit interest on demand deposits. A second set of questions asked banks about the likely impact on their reserve management practices of the imminent transition to lagged reserve requirements.¹¹ A third set of questions asked banks to consider how they might react if the Federal Reserve were to restructure its discount window as a Lombard credit facility.¹² In this structure, the discount rate would be set above the expected typical level of short-term market interest rates, but banks would be subject to little of the administrative scrutiny that currently comes with borrowing at the discount window.

Payment of Interest on Fed Account Balances and Demand Deposits (Questions 9-12)

The Federal Reserve has long supported proposals that would allow it to pay interest on some reserves. One common version of such proposals would allow the Federal Reserve to pay interest on Fed account balances applied against reserve requirements (question 10). Presumably, this policy would sharply reduce the incentives for banks to implement new retail sweep programs. Several banks said that receiving interest on required reserves would prompt them to dismantle their sweep programs, either immediately or eventually, presumably because of the operational costs associated with such running programs. More than half of the banks responded, though, that they would continue to seek ways to reduce their required reserves even if required Fed account balances earned interest close to the federal funds rate because they believed that they could earn higher returns on alternative investments. Nonetheless, the results on this question seem qualitatively different from the responses to a similar question on the May 1996 Senior Financial Officer Survey. On that survey, about two-thirds of the respondents indicated that they would dismantle their retail sweep programs either immediately or over time if interest were paid on Fed account balances held to meet reserve requirements.

In other potential responses to the payment of interest on reserves, about

one-half of the banks noted that they would be quite likely to try to economize on vault cash in order to meet a larger portion of their reserve requirement with interest-earning Fed account balances. A number of banks reported that they might develop new types of transaction accounts designed to lure back customers that had shifted their deposits to money market mutual funds.¹³ And a few banks reported that they would be likely to pursue funding by pledging private securities in repurchase agreement (RP) transactions. Currently, banks that borrow in the RP market for less than seven days using anything other than government and agency securities must classify the liability as a demand deposit that is subject to reserve requirements. As a result, this form of financing is not currently attractive to banks because of the costs of holding non-interest-bearing reserves to satisfy the associated reserve requirements.

Question 11 considered how banks might respond if the Federal Reserve were to pay interest--albeit at a below-market rate--on excess reserves. Not surprisingly, a number of banks indicated that they might hold somewhat higher levels of excess reserves. Some banks also indicated that they might tend to meet a larger portion of their reserve requirement early in the maintenance period because the cost of winding up with a large positive excess reserve position would be reduced. However, most banks expected that receiving interest on excess reserves would not affect their maintenance period average level of excess reserves or their pattern of excess reserve holdings over the maintenance period.

In some countries, the payment of interest on excess reserves has been used as a device to establish a lower bound on the interbank interest rate. The interest rate on excess reserves acts as a lower bound because banks would not be inclined to lend reserves in the market at a rate below what they can earn on balances held at the central bank. Not surprisingly, most banks indicated in the survey that they would be quite reluctant to lend in the federal funds market at a rate below that offered by the Federal Reserve on excess reserves. However, a few banks noted that they might be willing to sell federal funds at a rate below that offered on excess reserves if it helped them to reduce an especially large excess Fed account balance. These institutions expressed concern that a large excess Fed account balance might be viewed by the Federal Reserve or their own senior management as a sign of poor account management.

Question 12 asked banks about their likely pricing strategies for demand deposits in a world in which the Federal Reserve paid interest on Fed account balances applied against reserve requirements *and* in which banks could pay interest on demand deposits. Most banks responded that it was unlikely that they would pay a single rate on all demand deposit accounts. Rather, they indicated it was possible or likely that they would establish a tiered-rate schedule in which accounts with higher balances

would earn higher rates of interest. A number of banks also noted that it was likely that the highest-tier rate on demand deposits would still be considerably below the level of market interest rates.

The pricing strategy that banks would adopt in this scenario would have important implications for how large an increase in demand deposits might be expected. For example, banks on the survey in aggregate reported that, over the first quarter of this year, they swept more than \$90 billion in demand deposit balances on average at the end of the day into market instruments such as RPs, Eurodollars, and money market mutual funds. If banks elected to pay an attractive return on high-balance demand deposits, commercial customers might choose to unwind some of their sweep arrangements in favor of simply holding higher demand deposit balances. The respondents expected that about 30 percent of their commercial sweep arrangements would unwind in favor of interest-bearing demand deposits.¹⁴ If so, the resulting increase in demand deposits and required reserves would be considerable. If 30 percent of the respondent banks' swept balances were instead held as demand deposits, the level of demand deposits at the sample banks would rise by about \$27 billion which, in turn, would imply about a \$2.7 billion dollar rise in their required reserves. Extrapolating from this figure for the respondent banks to the entire banking system is difficult. The sample banks account for about 40 percent of all bank assets and about 35 percent of all bank demand deposits, but they probably account for a larger share of all commercial balances swept because the sample includes many of the largest banks in the country. It seems reasonable to infer that the aggregate increase in demand deposits might be as large as twice that for the sample, or roughly \$60 billion.¹⁵

Another important policy issue associated with allowing banks to pay interest on demand deposits is the extent to which banks would incur increased costs and lower profits. The responses to question 9 suggest how banks' short-run costs might be affected. Respondents noted that about 60 percent of their total demand deposits were held by businesses. In addition, about 60 percent of business demand deposits were held under compensating balance arrangements or under the terms of a commercial loan agreement. These ratios appear roughly consistent with historical information from the Demand Deposit Ownership Survey and from the January 1988 Senior Financial Officer Survey.¹⁶ The remaining 40 percent of business demand deposits, which are *not* held under some form of contractual agreement, was about evenly split among small, medium-sized, and large businesses.

Presumably, banks would not have to pay much if any interest on the 25 percent or so of demand deposits currently held by individuals because these individuals already have the option of establishing interest-bearing

checking accounts and have simply chosen not to do so, perhaps because fees would make such a change unattractive. Banks might have to pay interest on business demand deposits, but they would not incur much of an increased cost in paying explicit interest on the reported 60 percent of business demand deposits held under compensating balance arrangements because these balances already earn implicit interest through earnings credits. Banks might experience some increased costs in paying interest on the 40 percent or so of business demand deposits that are not held under compensating balance arrangements. However, as noted above, about 70 percent of these balances were reported to be held by small and medium-sized businesses. Such firms probably would not hold very large demand deposit balances and hence probably would not earn a market rate of interest on their deposits. Even current business savings account rates, for example, tend to be well below the level of short-term market interest rates. Presumably, banks would not pay more on a low-balance business demand deposit than they currently offer on business savings deposits.

In summary, it seems that banks would incur a short-run increase in costs if they were allowed to pay interest on demand deposits. The extent of this increase, however, would probably be muted considerably by a tiered-deposit rate schedule and by the fact that a substantial proportion of demand deposits already earn implicit interest. In the long run, the effects of allowing banks to pay interest on demand deposits would almost certainly be salutary by removing a significant regulatory distortion and by encouraging increased competition and efficiency in the banking industry.

Lagged Reserve Requirements¹⁷ **(Question 13)**

Recently, the Board approved a proposal to implement a system of lagged reserve requirements effective with the maintenance period beginning July 30, 1998.¹⁸ About three-quarters of the respondents to question 13 indicated that this plan would appreciably reduce the overall uncertainties involved in managing their reserve position and would be helpful in managing reserves more effectively with low required Fed account balances. These responses are consistent with public comments received from banks on the Board's proposal to move to a system of lagged reserve requirements. Less than half of the banks indicated that the reduced uncertainty with lagged reserve requirements might lead them to hold somewhat lower excess Fed account balances on average over the maintenance period and would also lead them to meet a larger portion of their reserve requirement early in the maintenance period.

Lombard Credit Facility

(Question 14)

From time to time, various observers have considered whether the Federal Reserve should restructure the discount window as a Lombard credit facility.¹⁹ The discount rate for such a facility would be set above the expected typical level of short-term market interest rates, and banks would be able to borrow from it with relatively few administrative constraints. This structure would tend to place an upper bound on the federal funds rate because banks would be unwilling to pay a higher rate on funds purchased in the market than they would pay in borrowing from the Lombard facility.

About three-quarters of the respondents indicated that they would be quite willing to borrow from such a facility on any day when the federal funds rate moved above the Lombard credit rate. However, a few banks indicated that they would not be willing to use such a facility in these circumstances. Moreover, about one-quarter of the respondents noted that they would be concerned that borrowing from such a facility might be viewed negatively by the Federal Reserve. A somewhat smaller proportion indicated concerns about perceptions by other market participants. Many respondents noted that their willingness to use such a facility would depend, to varying degrees, on overall financial conditions in the economy and their bank's own financial condition.

Judging from these responses, it seems that even if the discount window were restructured as a Lombard credit facility, there would still be some lingering reluctance to borrow from the Federal Reserve, weakening its effectiveness in setting an upper bound on the federal funds rate. In addition, a number of administrative and policy concerns would complicate the actual implementation of this option. As noted previously, this option is not under active consideration by the Federal Reserve.

Part III: Effects of Recent and Potential Changes in Payment System Policies

Part III of the survey focused on banks' responses to certain policy and operational changes in the payment system. Questions 15 and 16 were aimed at determining the extent and nature of banks' participation in expanded operating hours of the Fedwire and Clearing House Interbank Payments System (CHIPS) large-dollar funds transfer systems. Questions 17-19 were targeted at banks that participate in both systems and inquired about the factors that influence whether banks send large-dollar payments on Fedwire or CHIPS. Questions 20-24 asked about banks' responses to the April 1994 implementation of the 24 basis point daylight overdraft fee (annual rate) and the fee increase to 36 basis points in April 1995.²⁰

The May 1996 Senior Financial Officer Survey included a question about banks' response to the daylight overdraft fee. The 1998 survey obtained more detailed responses on this topic and also attempted to determine banks' response to a hypothetical further increase in the daylight overdraft fee.

Expanded Fedwire and CHIPS Operating Hours and Payment System Choice (Questions 15-19)

On December 8, 1997, the Fedwire funds transfer system and CHIPS began operating at 12:30 a.m. ET. Formerly, the systems opened at 8:30 a.m. and 7:00 a.m. ET, respectively.²¹ The Federal Reserve expected that the number of banks sending Fedwire transfers during expanded hours initially would be limited to a small subset of Fedwire participants that initiate the bulk of Fedwire dollar value, but that eventually more banks would elect to send transfers during early hours. The survey responses are consistent with this expectation. Ten banks, representing about one-quarter of the survey respondents, indicated that they are sending funds transfers during expanded Fedwire hours (question 15.1).²² Eleven other banks indicated they are considering sending transfers during expanded hours at some future time (question 16.2). Of the survey banks that are CHIPS participants, over one-half reported sending transfers during expanded CHIPS hours.

One of the primary determinants of the length of expanded Fedwire operating hours was the Federal Reserve's desire to provide sufficient overlap of Fedwire with the banking days in European and Asian markets. As a result, the Federal Reserve expected that banks would use expanded hours mainly to send payments related to international transactions, for example, to settle dollar payment instructions received from international affiliates or respondent banks. Anecdotal evidence received from a few large Fedwire users in the weeks following the initial extension of Fedwire hours, however, indicated that a large number of transfers sent during expanded hours were domestic commercial payments. The survey results confirm this evidence in that the majority of banks reported that their expanded hour Fedwire payment activity is characterized by a mix of domestic- and international-related payments (question 15.2). The same result was reported by the majority of CHIPS participants, although these banks reported sending a slightly greater volume of international-related payments (question 15.3).²³

Banks' use of expanded hours to conduct a variety of payment activity seems to indicate that a longer operating day has enhanced processing efficiency for these banks. Indeed, the banks participating in expanded Fedwire or CHIPS hours rated increased operational efficiency as a fairly

important result of longer operating hours (question 16.1). Banks also rated enhanced opportunity for payment innovation and the possibility for earlier settlement of the dollar leg of foreign exchange contracts as important effects of expanded hours. These effects are consistent with the Federal Reserve's intended public policy goals for expanded funds transfer operating hours.²⁴

The degree of substitutability between Fedwire and CHIPS has long been of interest to the Federal Reserve in the context of payment system risk policy, as the Federal Reserve is concerned about the extent to which payment system policies increase implicit Fedwire costs and thus might prompt banks to shift large-dollar payment volume from Fedwire to systems that do not settle payments on a real-time basis in central bank money. Survey questions 17-19 were aimed at determining current usage of Fedwire and CHIPS by banks that participate on both systems and factors that influence choice of system.

Banks that use Fedwire and CHIPS indicated that they send about two-thirds of their large-dollar payment value on Fedwire compared with about one-third on CHIPS (question 17). However, banks in the New York District reported the reverse; they reported sending one-third of payment dollar value on Fedwire and two-thirds on CHIPS. These percentages should be interpreted with some degree of caution because banks' ability to send payments on CHIPS is limited by the extent that receiving banks are CHIPS participants.

On average, respondents indicated that the most important factors in choice of system are customer request and type of payment (for example, fed funds payments, commercial payments, payments for international transactions) (question 18). Banks rated price and the desire to minimize daylight overdrafts as the least important factors. This ranking suggests that the distinguishing characteristics of Fedwire and CHIPS, such as real-time gross settlement versus net settlement and network size, make the systems less than perfect substitutes. Another distinguishing characteristic may be system-enforced limits on payment activity, as over one-half of CHIPS participants reported that bilateral and net debit limits constrain their CHIPS payment activity to some degree (question 19). By contrast, internal Federal Reserve daylight overdraft data indicate that most large Fedwire participants rarely reach their debit cap limits on any given day.

Response to Daylight Overdraft Charges (Questions 20-24)

After the implementation of daylight overdraft charges in April 1994, the aggregate level of peak and average daylight overdrafts immediately

decreased by 40 percent. The most dramatic and widely expected response to fees came from the primary dealers in government securities that modified their financing practices. These modifications resulted in a decrease in the level and duration of securities-related overdrafts in the Fed accounts of the banks that provide clearance and settlement services to the primary dealers.²⁵ The Federal Reserve was interested in other actions that banks may have taken in response to the fee, in particular actions that may have affected overdrafts caused by funds transfer payments. Therefore, the May 1996 survey asked banks the extent to which they had taken certain measures to reduce daylight overdrafts. Banks on that survey reported that they had delayed sending funds transfers and, to a lesser extent, purchased federal funds earlier in the day as a means of avoiding daylight overdrafts.

Although the 1998 survey contained a longer list of potential actions taken by banks, responses to the 1998 survey were similar to those in 1996. One-half of the banks stated that daylight overdraft fees affected their account management practices (question 21) and that the most significant actions they took in response were to modify federal funds transactions delivery practices and to delay payments until sufficient account cover is available (question 22). Also similar to the 1996 survey, other expected responses, such as increased use of securities netting arrangements, increased use of term or continuing contract federal funds and RP contracts, and shift of payment volume from Fedwire to CHIPS, were not reported as significant actions taken in response to daylight overdraft fees.²⁶

The 1998 survey also asked to what extent banks had taken certain actions in response to the 50 percent increase in the fee in April 1995. In the weeks following the fee increase, the impact on aggregate overdrafts was unclear. Subsequent econometric analysis indicated that while the long-run effect of the fee increase on aggregate overdrafts may have been more significant than initially thought, the impact was not nearly as large as in 1994.²⁷ The results from the 1998 survey appear to be consistent with that analysis: Banks reported a slight marginal response to the fee increase in the form of payment delays, shifting volume from Fedwire to CHIPS, increased use of term or continuing contract federal funds and RP contracts, and charging customers for overdrafts. Not surprisingly, banks reported that all of the potential responses to fees identified would be more likely if the fee were increased by another 50 percent.

Various analysts have hypothesized that an intraday market for funds might develop as a result of daylight overdraft fees, as banks might find borrowing and returning funds during the day from private counterparties less costly than charges for Federal Reserve intraday credit.²⁸ To date, it does not appear that such a market is emerging. Respondents reported

that several factors currently impede an intraday funds market. Concerns about efficiency, in terms of the ability to ensure timely intraday delivery and receipt of funds, were rated as the most dominant factors (question 23). Transaction and interest costs were also rated as fairly important barriers to an intraday market. Respondents indicated that a relatively large increase in the daylight overdraft fee may lead to the development of such a market (question 24).

[Complete report \(171 KB PDF\)](#)

Notes

1. Many of the reserve market issues addressed in the survey were discussed by Governor Lawrence H. Meyer on March 3, 1998, in [testimony](#) before the Senate Committee on Banking, Housing, and Urban Affairs. [Return to text](#)
2. Volatility has also been contained by changes in open market operations to adapt to low reserves. [Return to text](#)
3. The Federal Reserve surveyed forty-four large commercial banks, with respondents selected from each Federal Reserve District. The mean asset size of the survey banks is \$40 billion, and total assets of the survey banks account for about 40 percent of all commercial bank assets. In addition, these institutions account for 40 percent of aggregate required reserves and 36 percent of aggregate balances held at the Federal Reserve, including required reserve balances, excess reserves, and required clearing balances. Ninety percent currently have retail sweep programs in place. Given the nature of the sample, the results are most indicative of large bank behavior. [Return to text](#)
4. Required Fed account balances plunged in early 1991 following the reduction in the reserve requirement ratio for nontransaction accounts from 3 percent to zero in December 1990. For the next couple of years, required Fed account balances grew slightly, followed by a steady decline brought on by the start of retail sweep account programs in 1994. [Return to text](#)
5. Balances in such accounts also can be lowered in response to a positive as-of adjustment. [Return to text](#)
6. During the first four months of 1998, about three-quarters of the survey banks were bound on average in a given maintenance period. [Return to text](#)

7. The implicit return that institutions receive on their clearing balance requirement is equal to the effective federal funds rate over the maintenance period adjusted by an imputed reserve adjustment factor. The latter is intended to ensure that the earnings credit rate on a clearing balance requirement does not exceed the total return that a bank would earn if it held its clearing account with a correspondent bank rather than the Federal Reserve. The adjustment includes a "deduction" of 10 percent, representing the assumed marginal reserve requirement of the correspondent bank, and a "credit" of the bank's own marginal reserve requirement. Thus, if the bank itself has a 10 percent marginal reserve requirement, the reserve adjustment factor is equal to one and the bank earns the full federal funds rate on balances held to satisfy its clearing balance requirement. However, when an institution becomes "nonbound," its marginal reserve requirement is set at zero in the reserve adjustment factor, and hence it earns only 90 percent of the federal funds rate on balances held to satisfy its clearing balance requirement. [Return to text](#)

8. For a general discussion of this episode and the connection between low required Fed account balances and funds rate volatility, see the articles by Joshua N. Feinman, "Reserve Requirements: History, Current Practice, and Potential Reform," *Federal Reserve Bulletin*, vol. 79 (June 1993), pp. 569-89, and Cheryl L. Edwards, "Open Market Operations in the 1990s," *Federal Reserve Bulletin*, vol. 83 (November 1997), pp. 859-74. For analytical discussions of low required Fed account balances and federal funds rate volatility, see James A. Clouse and Douglas W. Elmendorf, *Declining Required Reserves and the Volatility of the Federal Funds Rate*, Finance and Economics Discussion Series 1997-30 (Board of Governors of the Federal Reserve System, 1997-30); and also Gordon H. Sellon Jr. and Stuart E. Weiner, "Monetary Policy Without Reserve Requirements: Analytical Issues," *Economic Review*, Federal Reserve Bank of Kansas City, vol. 96, no. 4 (1996), pp. 5-25. [Return to text](#)

9. For a discussion of trends in discount window borrowing behavior, see James A. Clouse, "Recent Developments in Discount Window Policy," *Federal Reserve Bulletin*, vol. 80 (November 1994), pp. 965-77. [Return to text](#)

10. Banks' reluctance to borrow at the window was especially acute in the early 1990s. In February 1991, Chairman Greenspan noted in his semiannual testimony to Congress under the Full Employment and Balance Growth Act of 1978 (the Humphrey-Hawkins Act) that the discount window, as always, was available to meet the short-term liquidity needs of depository institutions in appropriate circumstances. Given the findings in the May 1996 Senior Financial Officer Survey indicating that banks remained quite reluctant to turn to the discount window, Reserve Bank staff have met with officials of many depository

institutions as well as with other federal regulators in an effort to dispel misperceptions about the use of the discount window. [Return to text](#)

11. The notice of proposed rulemaking was published in the *Federal Register*, 62 Fed. Reg. 60671 (November 10, 1997). The final rule was approved by the Board of Governors on March 24, 1998. Under the lagged reserve requirement system, depositories will maintain reserves over a two-week maintenance period based upon their average level of transaction deposits over a two-week computation period. The maintenance period begins on the third Thursday following the Monday end of the computation period. [Return to text](#)

12. Such a change is not under active consideration by the Federal Reserve. [Return to text](#)

13. Presumably banks would try and lure back household customers, as the ability to lure back business customers would be limited without interest on demand deposits. [Return to text](#)

14. Even with an attractive rate of interest offered on demand deposits, there may be reasons for the continuation of commercial sweep arrangements. For example, firms might be more comfortable sweeping a large balance into an RP rather than holding it as a demand deposit because only the first \$100,000 in a demand deposit would be insured while balances in an RP agreement would be fully collateralized. Moreover, there are apparently important tax considerations for some firms (and banks) in booking deposits as a deposit at the foreign office of a U.S. bank rather than as a domestic demand deposit. See, for example, the discussion in Marcia Stigum, *The Money Market* (Dow Jones-Irwin, 1990), pp. 276-78 or *Banking and Finance in the Cayman Islands* (Peat, Marwick, Mitchell & Co., 1988). On the other hand, as a result of the depositor preference provisions of the Omnibus Budget Reconciliation Act of 1993, Eurodollar deposits have a lower priority in bankruptcy proceedings than domestic deposits, which might be a factor at the margin that would encourage corporate customers to move overnight Eurodollar deposits back as domestic demand deposits. In addition, banks may have some incentives to maintain commercial sweep arrangements as well. For example, RPs and Eurodollar liabilities are not included in the assessment base for deposit insurance premiums while demand deposit balances are. Also, sweeps into money market mutual funds effectively reduce the size of the bank's balance sheet and hence boost its regulatory capital ratios. [Return to text](#)

15. Of course, the ultimate increase in demand deposits in this scenario could be considerably higher. For example, interest on demand deposits might cause businesses to shift funds out of savings accounts or money

funds and into demand deposits. In addition, if banks began to pursue overnight RP funding using private securities as collateral as noted in question 10, aggregate demand deposits would increase. Finally, banks might convert some of their overnight federal funds sold position to overnight demand deposits. Interbank deposits are not included in the monetary aggregates, so this conversion would not have any effect on M1 or M2. However, interbank transaction deposits are reservable so the conversion of overnight federal funds to overnight demand deposits might boost aggregate required reserves to the extent that the marginal reserve requirement for banks "lending" overnight demand deposits, and hence able to deduct such "due from" deposits from reservable liabilities, was lower on average than the marginal reserve requirement for banks receiving such "due to" demand deposits. [Return to text](#)

16. In the past, the Federal Reserve obtained information on the holders of demand deposits from the Demand Deposit Ownership Survey (DDOS), but the DDOS was discontinued in 1990. Results from the January 1988 Senior Financial Officer Survey were discussed in Patrick I. Mahoney, "The Recent Behavior of Demand Deposits," *Federal Reserve Bulletin*, vol. 74 (April 1988), pp. 195-208. [Return to text](#)

17. Discussion and debate over the merits of various forms of reserve requirements including lagged and contemporaneous reserve requirements have a long history. See, for example, Joshua N. Feinman, "Reserve Requirements: History, Current Practice, and Potential Reform," *Federal Reserve Bulletin*, vol. 79 (June 1993), pp. 569-89; or William Poole and Charles Lieberman, "Improving Monetary Control," *Brookings Papers on Economic Activity* (1972:2), pp. 293-335. [Return to text](#)

18. For more information see the notice of final rule in the *Federal Register*, 63 Fed. Reg. 15069 (March 30, 1998), which includes a background discussion. [Return to text](#)

19. See for example, John Wenninger, "Alternative Approaches to Discount Window Lending," in *Reduced Reserve Requirements: Alternatives for the Conduct of Monetary Policy and Reserve Management* (Federal Reserve Bank of New York, 1993), pp. 137-68; or Milton Friedman, "Monetary Policy: Theory and Practice," *Journal of Money, Credit and Banking*, vol. 14 (February 1982), pp. 98-118. [Return to text](#)

20. The daylight overdraft fee is often quoted as an effective annual rate. The annual rate is converted to an effective rate by multiplying it by the fraction of the day that Fedwire operates. The current effective rate is 27

basis points (36 x 18/24). [Return to text](#)

21. Fedwire and CHIPS closing times (6:30 p.m. and 4:30 p.m. ET, respectively) did not change. [Return to text](#)

22. Internal Federal Reserve data indicate that about 100 Fedwire participants, representing about one percent of all participants, send transfers during expanded Fedwire hours. Of these 100, a core group of about 40 banks send transfers during early hours each day: The remaining banks participate intermittently. [Return to text](#)

23. This result is consistent with historical payment patterns on CHIPS and Fedwire. Typically, payments related to international transactions are proportionally more of total transfers on CHIPS than on Fedwire. [Return to text](#)

24. See 59 Fed. Reg. 8981 (February 24, 1994). [Return to text](#)

25. For further information, see Heidi Willman Richards, "Daylight Overdraft Fees and the Federal Reserve's Payment System Risk Policy," *Federal Reserve Bulletin*, vol. 81 (December 1995), pp. 1065-77. [Return to text](#)

26. In securities netting arrangements, such as those provided by the Government Securities Clearing Corporation and Delta Clearing Corporation, obligations resulting from the delivery and receipt of securities transactions among a group of participants are netted down to a single amount owed to or from each participant in the arrangement. [Return to text](#)

27. See Diana Hancock and James A. Wilcox, "Intraday Management of Bank Reserves: The Effects of Caps and Fees on Daylight Overdrafts," *Journal of Money, Credit, and Banking*, vol. 28, part 2 (November 1996), pp. 870-909. [Return to text](#)

28. See David B. Humphrey, *Payment Systems: Principles, Practice, and Improvements*, Technical Paper 260 (World Bank, February 1995). [Return to text](#)

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