The Discount Window: Time for Reform?

By Craig S. Hakkio and Gordon H. Sellon, Jr.

For many years, the Federal Reserve's discount window has played an important role in monetary policy. Discount window borrowing helps individual depository institutions manage their reserve accounts in the presence of unexpected deposit and payments flows. Improved reserve management, in turn, helps stabilize the overnight federal funds market by reducing the volatility of short-term interest rates. Moreover, announced changes in the Federal Reserve's discount rate have often signaled important shifts in the stance of monetary policy and have frequently been associated with large changes in market interest rates, exchange rates, and asset prices.

In the 1990s, however, the importance of the discount window has diminished considerably. The amount of borrowing has declined dramatically as fewer and fewer institutions have relied on the window to meet short-term credit needs. Consequently, the usefulness of the discount window in smoothing reserve imbalances and stabilizing interest rates may have been reduced. In addition, changes in monetary policy operating procedures and the formal announcement of monetary policy decisions by the Federal Reserve may have reduced the effectiveness of discount rate changes in influencing market interest rates and asset prices.

In view of these developments, it may be time to rethink the role of the discount window and to consider changes in its structure. One alternative to the traditional discount window is a "Lombard-type" lending facility in which depository institutions can borrow more freely than under the current system but at a higher rate. A number of central banks have recently adopted such a system, including the European Central Bank, the Bank of Canada, the Reserve Bank of Australia, and the Reserve Bank of New Zealand. The Federal Reserve recently employed a similar structure in the design of its Century Date Change Special Liquidity Facility.

While there appear to be good arguments in favor of modernizing the discount mechanism, a number of conceptual and practical issues would have to be addressed before implementing a Lombard-type lending facility. An additional consideration, going forward, is the projected reduction in the supply of Treasury debt over the next few years. A shrinking supply

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of Treasury securities could complicate the use of open market operations in providing reserves to the banking system and require the Federal Reserve to place greater emphasis on the discount window. Consequently, any redesign of the discount window would need to address this issue.

This article analyzes the changing role of the discount window in monetary policy and examines the case for discount window reform. The first section discusses the traditional role of the discount window and highlights its important strengths and weaknesses. The second section provides a brief history of discount window use and examines the factors behind its diminished role in recent years. The third section examines how a Lombard-type lending facility would operate and identifies some of the key issues involved in moving to a new discount window structure.

I. THE DISCOUNT WINDOW AND MONETARY POLICY

The Federal Reserve's discount window has traditionally played a key role in monetary policy. Borrowing at the discount window serves as an important source of short-term liquidity for depository institutions and helps stabilize short-term interest rates. Changes in the discount rate can alter the incentives for institutions to borrow at the discount window and may also influence market interest rates and prices of other financial assets. Over the years, both the structure of the discount window and its role in monetary policy have been subjects of considerable debate.

The role of discount window borrowing

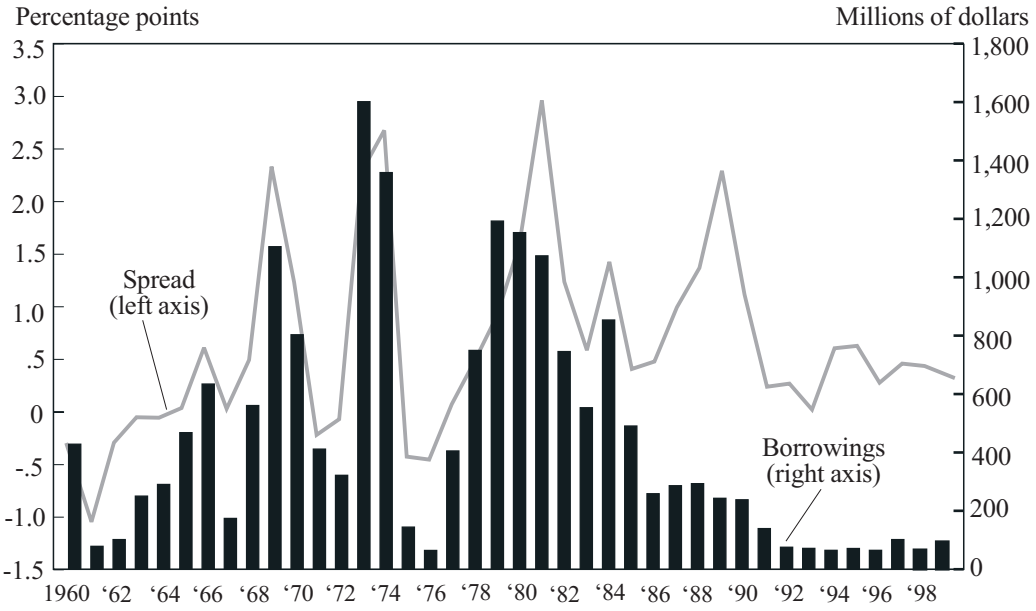
The Federal Reserve implements monetary policy by influencing short-term interest rates through its control over the supply of nonborrowed reserve balances held by depository institutions. Reserves can be adjusted either through open market operations—the purchase or sale of government securities—or through the discount window. While the Federal Reserve exercises direct control over the amount of reserves provided through open market operations, use of the discount window depends on both the need and willingness of depository institutions to borrow and on terms and conditions for discount window access set by the Federal Reserve.

Most institutions use discount window borrowing to help manage their reserve balances in the presence of uncertain payments and deposit flows.[1] Thus, an institution facing a prospective overdraft in its reserve account at the end of a day may seek funds either in the overnight federal funds market or through the discount window. Similarly, an institution may turn to the discount window to help satisfy its reserve requirements over a two-week reserve maintenance period.

Whether a depository institution uses the discount window depends partly on its willingness to borrow and partly on the relative cost of the discount window as compared to alternative funding sources. Some institutions choose not to use the discount window, perhaps because they see a stigma attached to such borrowing. For example, they might feel that reliance on discount window borrowing could be interpreted as a sign that an institution is having unusual liquidity problems that cannot be met through normal funding channels. Other institutions may use the window when the cost of discount window credit is less than the cost of alternative sources of funds, for example, when the discount rate is less than the overnight federal funds rate.

The amount of discount window borrowing also depends on terms and conditions set by the Federal Reserve. Unlike many central banks, the Federal Reserve has traditionally relied heavily on regulation and administrative guidelines to control use of the discount window. Many central banks control access only through their discount or lending rate. Typically, this

Chart 1
ADJUSTMENT CREDIT BORROWING AND THE SPREAD



rate is set as a penalty to the market rate, and institutions are permitted to borrow freely at the penalty rate as long as they have adequate collateral. In contrast, the Federal Reserve has generally relied more on regulation than on price to control the amount of borrowing. Currently, for example, three basic principles guide use of the discount window:

- The Federal Reserve provides credit at its own discretion.
- Borrowing must be for an appropriate reason.
- The borrower must seek other reasonably available sources of funds before turning to the discount window.[2]

The reliance on administrative restrictions to limit discount window borrowing has important implications. Because of these restrictions, in periods when overall liquidity needs are high, some of these needs may not be satisfied through the discount window. In this situation, the overnight federal funds rate will tend to exceed the discount rate, giving institutions an increased incentive to borrow at the window. Indeed, there has generally been a positive spread between the federal funds rate and the discount rate and a positive relationship between the amount of borrowing and the size of the spread (Chart 1).[3]

The existence of a positive spread has two further implications. First, there is typically a subsidy, and sometimes a large subsidy, to discount window borrowing. Second, the sensitivity of borrowing to the spread helps cushion the federal funds rate when there are unexpected changes in reserve demand or supply. For example, if reserve supply is unexpectedly low, depository institutions will have to scramble for funding which will put upward pressure

on the federal funds rate. However, some of this pressure will be relieved as the higher funds rate causes institutions to seek cheaper funding at the discount window. Similarly, if excess liquidity places downward pressure on the federal funds rate, institutions will rely less on discount window borrowing, which will help temper the decline in the funds rate. Thus, the positive interest-sensitivity of borrowing can help reduce volatility in the federal funds rate. Lower volatility in the federal funds market may help the Federal Reserve maintain its target for the federal funds rate and may also contribute to lower volatility in other interest rates.

The role of the discount rate

Discount rate changes also play an important part in monetary policy. Decisions to approve discount rate changes are made by the Board of Governors, based on rate actions submitted by the boards of directors of the regional Federal Reserve Banks.[4] The Board of Governors approves or denies these actions depending on its assessment of whether overall economic conditions warrant a change in the discount rate.[5]

The impact of discount rate changes will depend in large part on how monetary policy is implemented. In recent years, the Federal Reserve has conducted monetary policy by using open market operations to maintain a target federal funds rate. In this environment, discount rate changes do not have a direct effect on market interest rates but may influence the amount of discount window borrowing.[6] For example, if the federal funds rate target is not changed when the discount rate is increased, the entire impact of the discount rate change will be felt on borrowing. In this situation, there is no upward pressure on the federal funds rate because additional reserves are provided through open market operations in order to maintain the fixed funds rate target. Borrowing will be reduced, however, because with a fixed funds rate target, the higher discount rate reduces the incentive to borrow. Alternatively, if the funds rate target is raised by the same amount as the discount rate, not only is there no independent effect of the discount rate on the federal funds rate, but there is also no impact on borrowing because the spread is unchanged.

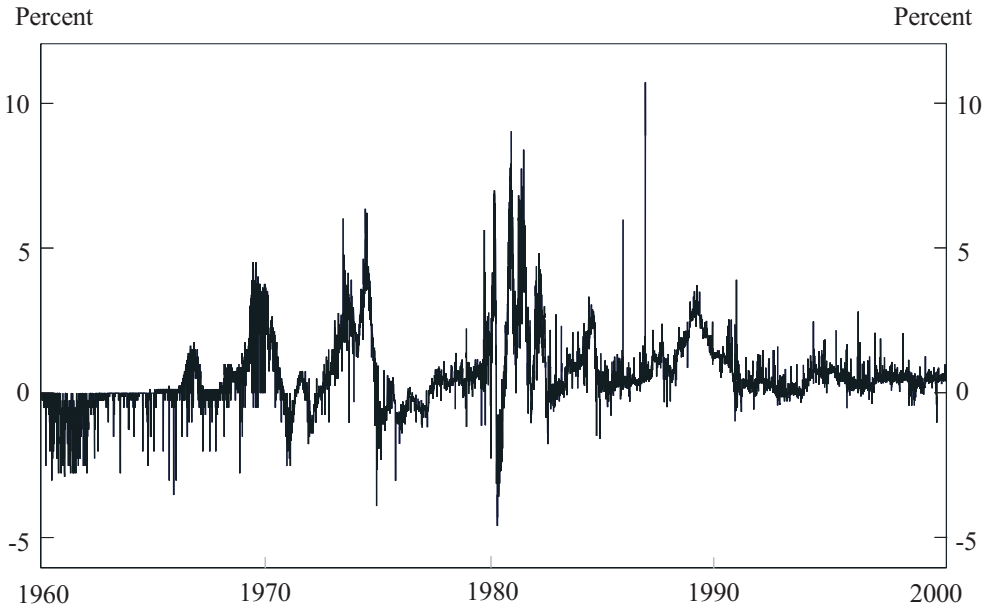
Even when the Federal Reserve employs a federal funds rate target, however, discount rate changes can still have an indirect effect on market interest rates and asset prices if the discount rate changes reveal new information to financial markets about current or future monetary policy. For many years, the Federal Reserve's only contemporaneous public announcement of policy changes was in the form of a discount rate change. Thus, discount rate announcements frequently received considerable attention and were sometimes accompanied by large movements in market interest rates, exchange rates, and other asset prices. In addition, since discount rate changes tended to be relatively infrequent and not readily reversed, they were sometimes interpreted as evidence of additional policy actions in the future.

Discount window policy issues

Over the years, considerable controversy has surrounded the discount mechanism. Most criticism of the traditional structure has focused on the existence of subsidies for discount window borrowing and the use of nonprice means of restricting access to the discount window. In contrast, arguments supporting the traditional system have emphasized the need to limit borrowing to appropriate uses and the role of the discount window in stabilizing interest rates.

As noted earlier, the discount rate has frequently been lower than the federal funds rate. Thus, institutions that borrow under these circumstances receive a subsidy that allows them to receive lower funding costs than institutions that borrow in the federal funds market. At various times this subsidy has been quite large. For example, in the 1970s and early 1980s, the dis-

Chart 2
FUNDS RATE/DISCOUNT RATE SPREAD



count rate was sometimes 500 basis points or more below the daily average federal funds rate (Chart 2). However, the size of the subsidy has diminished in recent years as the spread between the federal funds rate and the discount rate has declined.

Discount window subsidies raise two general policy concerns. One concern is about equity between those institutions that borrow and receive a subsidy and those that do not. A second concern is that subsidies can distort decision-making and lead to an inefficient allocation of resources as institutions undertake a higher level of those activities favored by the subsidy.

A related criticism focuses on the use of nonprice rationing of discount window credit. Such a system may have substantial administrative costs beyond the normal costs of valuing collateral. Discount window administrators must decide whether borrowing is appropriate under existing guidelines and must also monitor compliance with the regulations. It may also be difficult to administer these regulations in a consistent manner over time or across district Federal Reserve Banks.[7]

In defense of the traditional discount window structure, supporters have emphasized two issues. First, relying entirely on price to ration discount window credit may, at times, lead to inappropriate use of the discount window. One form of inappropriate behavior is the use of the discount window to fund speculative activities. During the late 1920s, for example, there was concern that banks were borrowing at the discount window to fund speculative activities in the stock market. Another concern is that institutions might use the discount window to bor-

row at a low rate and then turn around and loan the funds in the federal funds market at a higher rate. A second form of inappropriate behavior is excess reliance on the window as a source of longer term credit. For example, since the discount rate is an overnight rate, an institution might be able to profit by rolling over its borrowing for an extended period in order to fund higher yielding, longer term assets. Regulation of discount window access may be necessary to ensure that these activities do not occur.

Second, supporters of the traditional structure have emphasized the importance of the discount window in stabilizing the market for reserves. As noted in the previous section, a positive spread between the federal funds rate and the discount rate can help stabilize the federal funds rate by cushioning the effects of unexpected changes in reserve demand or supply. For example, depository institutions can increase or reduce their discount window borrowing to deal with a shortage or surplus of reserves. In these circumstances, discount window borrowing tends to alleviate the pressures in the reserves market, which helps stabilize the federal funds rate.

II. THE DECLINING ROLE OF THE DISCOUNT WINDOW

Over the years, the role of the discount window in monetary policy has evolved in response to changes in Federal Reserve operating procedures, depository institutions' need and willingness to borrow, and regulations governing discount window access. The importance of the window is currently at its lowest point in many years as the amount of borrowing has declined dramatically and changes in operating procedures have reduced the significance of discount rate changes.

A brief history of the discount window

From the founding of the Federal Reserve System until the Great Depression, the discount window was an important source of reserves for the banking system, and discount rate changes were a key component of monetary policy. Indeed, at its peak usage in 1921, the discount window provided 82 percent of bank reserves. Even as open market operations began to play a larger role in monetary policy in the latter part of the 1920s, the proportion of reserves provided through the window never fell below 37 percent (Shull).

The role of the discount window diminished dramatically during the next two decades. In the 1930s, the window was rarely used, in part, because banks' large holdings of excess reserves reduced the need to borrow. Then, during and immediately following the Second World War, the Federal Reserve's policy of supporting the financing of government securities assured adequate reserve availability so that banks did not need to borrow.

Following the Treasury-Federal Reserve Accord in 1951, normal monetary policy operations resumed, and banks returned to the discount window. Although borrowing was limited initially by banks' use of their vast holding of government securities to manage short-term liquidity, increased use of the window became a major concern of the Federal Reserve.[8] In 1953, a System Committee on the Discount and Discount Rate Mechanism was established to discuss the philosophy and effectiveness of the discount mechanism. In 1955, recommendations of this committee led to the establishment of a new set of "General Principles" to guide discount window usage and revisions to Regulation A, which governs discount window use. The intent of these changes "reflected a choice to restrict activity at the discount window well below even the lowest levels reached in the 1920s and to provide almost all reserves through open market operations" (Shull).

The most recent effort at comprehensive reform of the discount mechanism began in 1965 with the establishment of a new System

Committee on the Fundamental Reappraisal of the Discount Mechanism. The tenor of this reform effort was considerably different from the 1953 study. Indeed, the view of this committee was that discount window use had become too circumscribed by the 1955 revisions to Regulation A and that liberalized access to the discount window was necessary. According to the report of this committee,

> The proposed redesign of the discount mechanism has as its chief objective increased use of the discount window for the purpose of facilitating short-term adjustments in bank reserve positions. A more liberal and convenient mechanism should enable individual member banks to adjust to changes in fund availability in a more orderly fashion and, in doing so, should lessen some of the causes of instability in financial markets without hampering overall monetary control.

Key recommendations of this committee included the establishment of more objective and uniform terms and conditions for discounting across district Reserve Banks and the creation of seasonal credit and extended credit borrowing programs.

Recent behavior of discount window borrowing

Since this last comprehensive effort at reform, there have been relatively few changes in the structure of the discount mechanism.[9] Over the past three decades, however, there has been a significant change in the behavior of discount window borrowing (Chart 1). During the 1970s and early 1980s, borrowing at the discount window exhibited typical cyclical variation. Borrowing rose in periods of increasing interest rates as the spread between the funds rate and the discount rate increased and fell as interest rates and the spread declined. Since the mid-1980s, however, discount window borrowing has experienced a strong secular decline. Indeed, average weekly borrowing has fallen from around $1 billion in the early 1980s to less than $100 million over the past decade.[10]

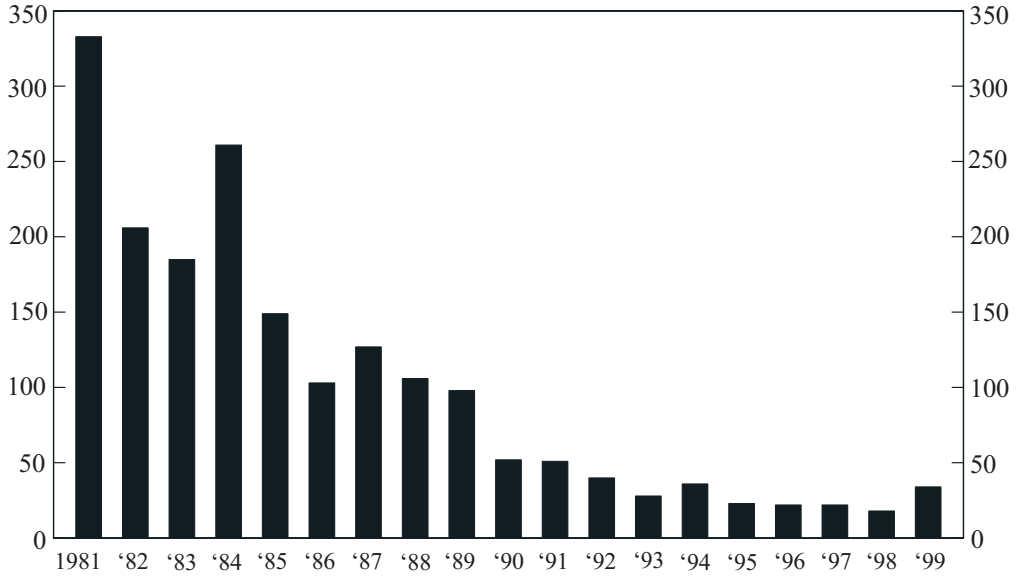
Much of the change in borrowing behavior can be traced to a decline in the number of depository institutions using the discount window (Chart 3). In the early 1980s, on average, over 200 institutions borrowed each week, with as many as 550 borrowing in a single week. In contrast, over the past four years, the average number of institutions borrowing in a week has fallen to about 25. Most of this decline in usage can be traced to smaller institutions, those with domestic deposits of less than $200 million. From 1981 to 1985, about 180 small institutions borrowed each week. Over the past four years, however, only about 14 small institutions borrowed each week.

Along with the decline in borrowing, the traditional cyclical relationship between the spread and the amount of borrowing has largely disappeared in recent years. Indeed, since the mid-1980s there is little apparent relationship between the amount of borrowing and the spread (Chart 1).[11] This development suggests that the role of the discount window in stabilizing reserves and the federal funds rate, as discussed earlier, may have diminished as well.

Several reasons have been given for the dramatic decline in discount window use. Perhaps the most frequently cited explanation is increased reluctance to borrow because of the stigma associated with use of the discount window (Clouse). The reduction in borrowing coincided with increased banking problems and failures during the late 1980s and early 1990s. According to this explanation, banks may have become more reluctant to use the window for fear of being identified as problem institutions.[12]

A second factor behind the decline in borrowing may be the reduced economic incentive to use the discount window because of a lower spread. During the 1980s, the spread between the funds rate and the discount rate averaged about 130 basis points. In contrast, during the

Chart 3
NUMBER OF INSTITUTIONS BORROWING



1990s, the average spread was only 40 basis points.[13]

A third possible explanation for the declining use of the discount window focuses on changes in reserve accounting regulations and reserve management practices. A shift from one-week to two-week reserve maintenance periods in 1984 gave depository institutions more flexibility in meeting reserve requirements, which may have reduced the need to borrow at the discount window. Another accounting change that may have reduced borrowing is the extension of the reserve carryover provision in 1992. This change allowed depository institutions to carry over a greater part of a reserve surplus or deficiency into the next maintenance period. By helping to improve liquidity management, this change may have enabled institutions to place less reliance on the discount window. More recently, reserve requirements have been moved from a contemporaneous to a lagged basis. This change may have assisted institutions in managing their reserve accounts and may also have made it easier for open market operations to meet reserve needs. Depository institutions have also increased their holdings of excess reserves in recent years, which may have reduced the need to borrow. Additionally, better reserve management practices, such as improved real-time information on reserve positions, may have reduced the need to turn to the discount window to cover unexpected reserve deficiencies.

A fourth explanation for reduced borrowing emphasizes the development of alternative funding sources for depository institutions. For some smaller institutions, the Federal Home Loan Bank System has played a growing role in providing funding in recent years. The liberaliza-

tion of eligibility requirements has allowed small banks as well as thrift institutions to become members of the Home Loan Bank System. Members can borrow from Home Loan Banks to fund short- term and intermediate-term liquidity needs. While FHLB borrowing may be somewhat more expensive than using the discount window, the terms of this borrowing may better fit institutions' needs for short- to-intermediate-term funding.[14]

Finally, the ongoing consolidation of the banking industry has likely affected use of the discount window. As a consequence of bank failures in the 1980s and early 1990s and an ongoing wave of bank mergers, there are far fewer banking organizations now than in the early 1980s. In addition, the internalization of funding and reserve management decisions associated with this consolidation has likely resulted in significant netting of liquidity needs within organizations and a reduced need to rely on the discount window and other external sources of funding.

A lesser role for the discount rate

The influence of the discount rate as a policy instrument also appears to have declined in recent years. Discount rate changes now have less effect on the amount of borrowing at the discount window. Moreover, direct and indirect effects of discount rate changes on interest rates and asset prices appear to have been reduced as well.

Two factors have reduced the impact of discount rate changes on the amount of discount window borrowing. One factor is the decreased willingness to borrow and the associated decline in the responsiveness of borrowing to the spread between the funds rate and the discount rate. A second factor is the relationship between the federal funds rate target and the discount rate. In recent years, changes in the discount rate have generally been accompanied by changes in the target federal funds rate. In fact, there have been no independent changes in the discount rate since the early 1980s.[15] Consequently, when the discount rate has been changed, there has generally been little or no change in the spread and thus little change in the incentive to borrow at the discount window.

The impact of discount rate changes on interest rates and asset prices also appears to have been reduced by changes in the way monetary policy is implemented. As discussed earlier, the use of a federal funds rate target effectively removes the ability of discount rate changes to have an independent, direct effect on the overnight federal funds rate. That is, with an unchanged funds rate target, the effects of a discount rate change are routinely offset by open market operations aimed at maintaining the funds rate target.

Indirect or announcement effects of discount changes also appear to have been reduced by changes in the way monetary policy is implemented. Prior to 1994, announcements of discount rate changes were often seen as signaling major changes in monetary policy because changes in the federal funds rate target were not announced when they were made. Thus, attention tended to focus on discount rate changes and, indeed, several studies found highly significant responses of market interest rates, exchange rates, and other asset prices to discount rate changes.[16] Since 1994, however, the Federal Open Market Committee has announced all changes in the federal funds rate target whether accompanied by a discount rate change or not. Consequently, the information content of discount rate changes has likely been reduced. In addition, recent studies suggest that financial markets have been better able to anticipate monetary policy actions in recent years (Roley and Sellon; Urich and Wachtel). Thus, the effect of a policy action may be built into market rates before the action is announced, lowering the information value of the formal announcement and reducing its impact on interest rates and asset prices.

Although the effects of discount rate changes on discount window borrowing and interest rates may have been reduced in recent years, the role of discount rate recommendations by district Reserve Banks continues to be an important part of the monetary policy process. Such recommendations provide the Board of Governors with an independent assessment of the strength of economic activity and an overall sense of the need for a change in monetary policy.

III. MODERNIZING THE DISCOUNT MECHANISM

As the importance of the discount window has declined in recent years, there has been increased interest in modernizing the discount mechanism. Many advocates for change would replace the traditional discount window with a "Lombard-type" lending facility similar to that used by a number of other central banks. Although such facilities appear to have a number of advantages over the current discount system, a number of complex implementation issues must be addressed before the relative merits of the two systems can be meaningfully compared. An additional complication is the declining supply of Treasury securities, which could have an important impact on the role of the discount window and how it should be structured.

What's the alternative?

Many advocates for changing the structure of the discount mechanism favor the use of a "Lombard-type" lending facility. Such systems differ from the traditional discount window in two major respects. First, borrowing from the facility is subject to minimal administrative restrictions on eligibility. Generally, access is available to any solvent financial institution that holds reserves or settlement balances at the central bank and can post acceptable collateral. Second, the lending rate is set at a penalty to market rates or, more commonly, to the central bank's target for the overnight interest rate. Thus, there is normally an incentive to borrow only when the overnight rate is sufficiently high relative to the target rate to make the cost of Lombard lending attractive. In effect, the Lombard facility acts as a safety valve that damps large upward movements in the overnight rate due to unexpected liquidity pressures.

Lombard lending facilities have been traditionally used in monetary policy operations in a number of European countries including Germany, Switzerland, and Austria.[17] Recently, similar facilities have been adopted by the newly created European Central Bank and by central banks in a number of other countries including Canada, Australia, and New Zealand. Moreover, the Federal Reserve implemented a Lombard-type Special Lending Facility (SLF) as a temporary measure to help depository institutions manage liquidity pressures during the period surrounding the century date change. The SLF had much fewer administrative restrictions than the traditional discount window. In addition, while the basic discount rate continued to be set below the federal funds rate target, the SLF lending rate was set at 150 basis points above the funds rate target.

The role of a Lombard facility in managing liquidity pressures depends on two structural features: restrictions on access and the size of the margin of the lending rate over the overnight rate target. Generally speaking, with fewer restrictions on access, more depository institutions are likely to be able and willing to use the facility. Consequently, the easier the access, the more likely it is that the Lombard lending rate will serve as a cap on the overnight rate and so limit large spikes in the rate due to liquidity pressures.

The size of the margin is also important because it will determine how much borrowing occurs and how much interest rate volatility is reduced. If the margin between the lending rate and the target rate is relatively small, borrowing is likely to be larger because it takes smaller

movements in the overnight rate to reach the lending rate and induce institutions to borrow. At the same time, the smaller margin will tend to stabilize the overnight rate to a greater degree. In contrast, a wider margin will lead to larger interest rate volatility and less borrowing.

Central banks that have adopted Lombard- type facilities have generally made similar decisions regarding access to the facility. Most have chosen to have few formal restrictions on access beyond a basic solvency requirement, restriction of borrowing to depository institutions, and adequate collateralization. In contrast to the traditional discount window, there are generally no requirements that institutions seek other sources of funding, and the purpose of the borrowing is not scrutinized. In the case of the Federal Reserve's SLF, however, eligibility was based partly on formal capital and supervisory standards and so may have been somewhat more restrictive than similar facilities at other central banks.

There has been considerably less uniformity among central banks in the size of the margin between the lending rate and the target overnight rate. Some banks, such as the Bank of Canada, the Reserve Bank of New Zealand, and the Reserve Bank of Australia, have employed relatively small margins of about 25 basis points. In contrast, the European Central Bank has typically set a margin of about 100 basis points, and the SLF used a 150-basis-point margin.[18]

Comparing the alternatives

Adopting a Lombard-type facility could have a number of advantages. Reduced regulation might lead to lower costs of administering the discount window, resulting in improved efficiency. In addition, under a Lombard system, there would likely be a smaller subsidy to borrowing because there would probably be a smaller margin between the overnight rate and the lending rate as compared to the traditional discount window. The subsidy would not be entirely eliminated, however, because institutions would only borrow when it was profitable, that is, when the costs of funds in the market exceeded the lending rate.[19] A Lombard facility would also reduce interest rate volatility in the overnight market by eliminating large spikes in the overnight rate. Thus, a Lombard facility might actually do a better job of stabilizing short-term interest rates than the traditional discount window in light of the reduced interest-sensitivity of discount window borrowing in recent years.[20]

At the same time, a number of difficult implementation issues are involved with adopting a Lombard facility. First, there is a tradeoff between credit risk and interest rate stability in the design of such a facility. The more accessible the facility is, the more the lending rate is likely to serve as an upper bound to the overnight rate. But, in this situation, the Federal Reserve is more likely to be exposed to credit risk from unsound institutions. On the other hand, the more access is restricted, the less the facility can act as a safety valve in alleviating liquidity pressures. Striking the right balance may be difficult.

A second issue is the potential use of the facility by institutions to fund longer term investments. If the lending rate is below the cost of alternative sources of funds, institutions may turn to the facility for longer term borrowing by renewing or rolling over their overnight borrowing. One way of dealing with this potential problem would be to introduce restrictions on the frequency of borrowing. Another approach would be to set a relatively high margin between the lending rate and funds rate target to reduce the incentive to use the lending facility for longer term funding. Still another approach would be to adopt an explicit term structure for lending rates to eliminate this incentive.

A third implementation issue is the size of the margin between the lending rate and the funds rate target. A narrow margin will provide more interest rate stability. However, market forces

will tend to play a much smaller role in determining short-term interest rates as heavy reliance is placed on the lending facility as a source of reserves. In addition, too narrow a margin may complicate the ability of open market operations to maintain the target federal funds rate. Indeed, with too small a margin it may be difficult to maintain a target rate that is different from the lending rate because any shortfall in liquidity is likely to drive the overnight rate immediately to the lending rate. These difficulties can be lessened with a wider margin, but at the expense of higher interest rate volatility.

A fourth issue is the role of the lending rate as a policy instrument under a Lombard system. As long as monetary policy is implemented via a federal funds rate target, changes in the lending rate, like the traditional discount rate, are likely to have limited policy significance. Indeed, if there is a fixed margin between the lending rate and the funds rate target, a change in one implies a change in the other, with no independent policy significance. Alternatively, if the margin is variable, the two rates can be adjusted independently, but the policy message resulting from this action would have to be clearly articulated to the public. In either case, the role of the regional banks in making lending rate recommendations could be maintained as under the current discount mechanism. However, with a fixed margin, the separate monetary policy responsibilities of the Board of Governors for discount rate changes and the Federal Open Market Committee for open market operations might need to be reexamined.

In several respects, a Lombard system would appear to be an improvement on the current discount window structure. A Lombard facility is likely to result in lower administrative costs and a reduced subsidy and may provide greater interest rate stabilization than the current system. At the same time, however, both the problems with the current system and the gains of moving to a Lombard system may be overstated, making a decision between the two less clear-cut.

Indeed, there are several reasons for believing that the current discount window is not broken and does not need fixing. One interpretation of the decline in discount window usage in recent years is that institutions are reluctant to use the window because of the stigma associated with borrowing. Moving to a Lombard system might then be a way of removing the stigma and improving the functioning of the lending facility. However, there is no guarantee that the stigma would disappear without considerable effort to educate depository institutions and financial markets that use of the facility does not reflect unfavorably on an institution.

Furthermore, rather than being a cause for concern, much of the decline in borrowing may actually be desirable if some longer term borrowing that was formerly done at the discount window is now done through other funding sources. Moreover, if the discount window were not functioning well as a safety valve for short-term liquidity pressures, greater volatility in the federal funds rate would be expected. Yet, despite the decline in borrowing and even with depository institutions now operating with much lower reserve balances, there has been no noticeable increase in interest rate volatility.[21] Consequently, while the discount window may continue to play an important role in helping individual institutions adjust to unexpected payments and deposit flows, it may now be less important and less needed as a source of systemic liquidity because of changes in reserve accounting procedures and reserve management practices. Thus, unless the current degree of interest rate volatility is an important policy concern, reducing volatility may not be a convincing argument for adopting a Lombard facility.

Finally, one advantage of a Lombard system is potentially lower administrative costs and subsidies. However, with the decline in discount window use in recent years and with consolidation in the banking system, some

reductions in administrative costs associated with the discount window have already occurred. It is not entirely clear what additional cost savings might materialize under a Lombard system. Furthermore, although discount window subsidies may be esthetically and economically unappealing, in recent years they have not been very large due to the low level of borrowing and small spread between the discount rate and funds rate.[22] Consequently, the benefits of adopting a Lombard system to improve efficiency and reduce subsidies may not be large.

Implications of a reduced supply of Treasury debt

Ultimately, a decision on the structure of the discount window may be heavily influenced by the impact of a reduced supply of Treasury securities on the implementation of monetary policy. A decreased supply of Treasury debt will complicate the use of open market operations and could expand the role of the discount window beyond a safety valve to become a more important source of reserves. If so, it will be important to determine whether the traditional discount window, a Lombard facility, or another structure would be best suited to this expanded role.

The onset of surpluses in the federal budget has led to projections of a significant decrease in or elimination of the government debt over the next decade. This development could affect the implementation of monetary policy through the use of open market operations. Currently, the Federal Reserve uses open market purchases and sales of government securities as its principal method of adjusting reserves to maintain a target federal funds rate. A smaller supply of securities will make it more difficult to carry out open market operations. An additional complication is that the amount of securities that the Federal Reserve purchases is likely to increase over time as a growing demand for currency requires an offsetting increase in reserves.[23]

One possible response to this development is to expand the range of assets that the Federal Reserve purchases in its open market operations to include securities of government agencies and even private debt. Another possibility is to consider expanding the amount of reserves that are provided through the discount mechanism so that the discount window once again becomes a significant and permanent source of reserves.

If the role of the discount mechanism is to be expanded, a key question is whether the traditional discount window structure, a Lombard facility, or a different structure would be best suited for this task. Both the traditional discount structure and a Lombard system appear to have limitations that may reduce their usefulness. In the case of the traditional discount window, greater use of the facility would require a greater willingness to borrow by depository institutions and might also require a significant increase in the funds rate-discount rate spread to increase the attractiveness of borrowing. However, increased borrowing and a larger spread would also increase the amount of subsidy to depository institutions that use the window. On the other hand, Lombard lending facilities have typically been used only as a safety valve or marginal source of reserves and not as a large or permanent source of reserves. Given these limitations, additional study may be needed to determine the best design for the discount mechanism in an era of a declining supply of Treasury debt.

IV. SUMMARY AND CONCLUSIONS

For many years, the discount window has played an important role in monetary policy. Discount window borrowing has provided a mechanism for individual depository institutions to adjust to unexpected deposit and payments flows and so has helped stabilize short-term interest rates. In addition, changes in the discount rate have influenced depository insti-

tutions' incentives to use the window and have also affected interest rates and prices of other financial assets.

In recent years, however, the role of the discount window has diminished considerably. Very few institutions now use the window as a means of adjusting to liquidity needs, and the significance of discount rate changes has been reduced by changes in monetary policy procedures.

In light of these developments, it may be appropriate to consider steps to reform the discount mechanism. One alternative to the traditional discount window structure is a Lombard-type lending facility. A number of other central banks have recently adopted Lombard systems. As compared to the traditional discount window, a Lombard system places greater weight on price than on regulation and administration to ration central bank credit. In principle, such an approach could provide a safety valve for depository institutions experiencing liquidity pressures while reducing administrative costs and subsidies associated with the traditional discount window. In practice, however, the choice may not be so clear-cut. There are a number of complex issues involved in implementing a Lombard system, and the benefits of change may not significantly exceed the costs. More important, the declining supply of Treasury securities in coming years may require changes in monetary policy operations and so influence the choice of a discount mechanism.

ENDNOTES

[1] This article focuses on routine, short-term borrowing for liquidity reasons that is done under the Adjustment Credit program. In addition, some depository institutions may borrow under the Seasonal Credit or Extended Credit programs. For more information on these programs, see Board of Governors.

[2] For more details on regulations and administrative guidelines governing the discount window, see Board of Governors.

[3] Without administrative restrictions and with no stigma attached to the use of the discount window, the discount rate would tend to serve as a cap for the overnight federal funds rate since there would be no reason or incentive to borrow at a rate higher than the discount rate.

[4] For a more detailed discussion of the role of discount rate recommendations in monetary policy, see Tootell.

[5] Strictly speaking, each district Reserve Bank establishes its own discount rate subject to review and determination by the Board of Governors. In practice, district banks usually charge a uniform rate. Thus, when the Board of Governors approves a rate change for an individual Reserve Bank or group of banks, the remaining banks adopt the new rate within a few days.

[6] In contrast, if the Federal Reserve implements policy by targeting nonborrowed reserves, as was the case from 1979 to 1982, or borrowed reserves as was the case from 1982 to 1988, the discount rate can play a more prominent role. In these circumstances, changes in the discount rate can have a direct effect on the overnight federal funds rate. For a further discussion of the impact of discount rate changes under alternative operating procedures, see Sellon.

[7] A third criticism of the current structure of the discount window is that, under operating procedures designed to control money growth, it may impede the Federal Reserve's ability to control the money supply. For example, if the Federal Reserve removes reserves through open market operations in order to reduce money growth, the resulting increase in the federal funds rate, with a fixed discount rate, will lead to greater borrowing and somewhat faster reserve and money growth. This criticism is especially relevant when the Federal Reserve uses a reserve operating procedure to attempt to control money growth but is not relevant under the current federal funds rate targeting procedures. For more discussion of this issue, see Sellon.

[8] With the resumption in use of the discount window in the 1950s, discount rate changes became more frequent (Thornton).

[9] One potentially important change that turned out to have limited impact was the Depository Institutions Deregulation and Monetary Control Act of 1980. This legislation extended reserve requirements to all depository institutions, including thrift institutions and credit unions, and also made them eligible to borrow from the discount win-

dow. However, revisions to Regulation A to implement this legislation required these institutions to rely on traditional sources of liquidity before approaching the discount window. Consequently, despite the expansion of eligible institutions, there was not a significant increase in discount window usage. Other changes in the discount mechanism in recent years were the establishment of a temporary discount rate surcharge in 1980-81, the introduction of market-related discount rates on seasonal and extended credit in the early 1990s, and restrictions on availability of discount window credit mandated by the FDIC Improvement Act (FDICIA) of 1991.

[10] Borrowing was somewhat elevated in the last quarter of 1999 due to liquidity concerns surrounding the Century Date Change. These higher levels do not appear to have persisted in the first part of this year.

[11] Statistical tests confirm the breakdown of the relationship between the amount of borrowing and the spread. For example, in a linear regression of borrowing on the spread estimated over the period from 1971 to 1984, there is a large and statistically significant positive effect of the spread on borrowing. In contrast, when this relationship is estimated after 1984, the effect of the spread on borrowing becomes smaller and statistically insignificant. See, for example, the discussion in Clouse.

[12] While this factor may have been important previously, particularly during the early 1990s, it is not entirely clear why this problem would continue to exist in light of the strong condition of the banking industry over the past few years.

[13] Since the true cost of using the discount window probably exceeds the discount rate because of nonprice restrictions, for many institutions the discount rate may have effectively been a penalty rate in recent years.

[14] Alternatively, it may actually be the case that FHLB borrowing is less expensive than the discount window when the administrative burden of the discount window is factored into its cost.

[15] In the early 1990s, both the federal funds target and discount rate were reduced on several occasions. In a few instances, the discount rate was lowered by more than the funds rate target, which increased the spread between the two. Generally speaking, the larger change in the discount rate on these occasions was primarily designed to restore the spread to its previous level after the funds target had been lowered previously without a change in the discount rate. Since 1994, discount rate changes have been accompanied by equal changes in the funds rate target.

[16] See Thornton for a discussion of the information content of discount rate announcements and references to other studies.

[17] In this article, the terms "Lombard-type facility" and "Lombard facility" are used generically to categorize similar facilities that are modeled along the lines of traditional Lombard facilities employed by the Deutsche Bundesbank, the Swiss National Bank, and the National Bank of Austria.

[18] In fact, most Lombard-type lending facilities are coupled with a deposit facility where institutions can obtain interest from the central bank on excess reserves and settlement balances. The lending rate and the deposit rate serve as upper and lower bounds for the overnight rate and a target for the overnight rate is set within this band or corridor. A number of countries, including Canada, Australia, and New Zealand, have chosen a relatively narrow 50-basis-point corridor. In contrast, the European Central Bank has generally set a band of 200 basis points. When the ECB came into existence, the band between the lending rate and the deposit rate was initially set at 50 basis points as a transition measure. Then the band was widened to 250 basis points. More recently, the band has been 200 basis points. It should be noted that the ECB does not have a target for the overnight rate. Rather, in conducting its open market operations it establishes either a fixed rate for repurchase agreements or a minimum bid rate for variable-rate repos. Changes in these rates serve to indicate changes in the stance of monetary policy.

[19] The size of the subsidy would also depend on the amount borrowed. It is difficult to say whether borrowing would be higher under a Lombard-type system than the current discount window. Partly this would depend on the size of the margin between the lending rate and the target overnight rate, with a smaller margin likely to induce more borrowing. The amount of borrowing might be higher under a Lombard-type facility if institutions feel that there is less of a stigma attached to this borrowing than to use of the traditional discount window.

[20] This issue is significantly more complicated if the comparison is made between a Lombard facility and the traditional discount window where borrowing is sensitive to the spread between the federal funds rate and the discount rate. The Lombard facility reduces volatility only by eliminating large upward spikes. The traditional mechanism does not prevent spikes, but rather smoothes rate movements in both an upward and downward direction. That is, a higher or lower funds rate elicits more or less borrowing, which tends to reduce rate volatility.

[21] For a more detained discussion of the decline in reserve balances in recent years and the implications for interest rate volatility, see Sellon and Weiner.

[22] Subsidies were also reduced when the rate on seasonal credit was changed from a fixed rate to a market-related rate.

[23] An increase in the demand for currency by the public drains reserves from depository institutions requiring an offsetting purchase of securities and increase in reserves to maintain a given interest rate target. Currency demand has grown strongly in recent years due to domestic and international factors and is likely to continue to increase unless there is a more rapid adoption of retail electronic payments that reduces the need for currency.

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