



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

STRICTLY CONFIDENTIAL (FR)
CLASS I - FOMC

TO: Federal Open Market Committee

DATE: December 9, 1988

FROM: Normand Bernard *NB*,

Attached are three memoranda dealing with the recent experience with discount window borrowing and the federal funds rate.

The first by Mr. Kohn summarizes the recent experience and discusses how it affected open market operations. The second by Messrs. Feinman and Rea explores the borrowing relationship in more depth, and the third by Mr. Gillum covers the conference call with the discount officers concerning these developments.

These memoranda relate to Agenda Item 4.

Attachments

STRICTLY CONFIDENTIAL (FR)
CLASS I - FOMC

BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM

Office Correspondence

Date December 9, 1988

To Federal Open Market Committee

Subject: Recent Experience with Borrowing
and the Federal Funds Rate and the
Implementation of Open Market Operations

From Donald L. Kohn

Borrowing and the federal funds rate

The attached memoranda discuss the apparent decrease in the willingness of depository institutions to borrow at the discount window. The size of the shift is still uncertain, but banks appear to have reduced their borrowing at any given spread between the federal funds and discount rates by at least \$300 million compared to the borrowing relation that was thought to prevail from the stock market collapse through late summer. The shift in borrowing seems to be widespread by size of institution--with institutions under \$1 billion contributing significantly--and by geographical area. The date at which the shift began also is uncertain--especially for smaller institutions, where strong seasonal borrowing this summer may have masked emerging weakness in adjustment credit. This fall, as seasonal credit dropped off, not only did adjustment borrowing by small banks fail to pick up, but at the same time large and intermediate-sized banks also seemed to limit their use of the discount window.

The reasons for the change in behavior are not clear. This latest episode may be part of a longer-term decline in discount window usage dating at least from early 1986. It is noteworthy that since then, the average number of borrowers each maintenance period has been trendless, failing to increase in response to wider spreads. This also has been a period of relatively high failure rates for both thrifts and banks--including smaller

banks in agricultural areas--and many institutions may be avoiding the discount window out of concern about public confidence.

At the largest institutions, some of the shortfall may be accounted for by attempts to save trips to the window in light both of relatively heavy borrowing on some settlement Wednesdays in September and early October and of expected widening spreads in the future in response to year-end pressures, credit demands associated with equity retirements, and tighter monetary policy. But these factors would be much less important for medium and especially smaller banks whose access to discount credit is substantially less circumscribed.

With regard to these banks, the staff attempted to uncover developments in underlying liquidity positions and any change in discount window administration that might affect borrowing totals. Presumably, most smaller banks do not realign their balance sheets over the short-run to take advantage of available discount window credit even if spreads are wide, but rather tend to turn to the window in a more passive way as liquidity needs arise. Thus, unusually ample liquidity might tend to damp discount window usage, at least for a time, independent of rate inducements. A conference call of discount officers revealed no special factors beginning in the summer or fall of 1988 in either the supply or demand for discount credit. Several officers noted, however, that there might be a longer-term decline in inadvertent use of the discount window by smaller banks as these institutions were encouraged under the daylight overdraft program to watch their deposit position at the Federal Reserve more carefully and as the tools to do so were made available to them. In some districts small banks were seen

to be quite liquid. However, inspection of the loans and deposits of smaller banks revealed no unusual movements in liquidity, through a reasonably comfortable liquidity position for these banks was suggested by increased sales of federal funds over recent months.

Implementation of open market operations.¹

As the shift in borrowing behavior made itself felt, the desk reacted flexibly. Initially, it allowed some slight firming of federal funds above the area expected by the FOMC as it continued to pursue the \$600 million borrowing objective. However, it was sensitive to the potential for very large deviations of federal funds from Committee expectations. As it became clear that such a deviation likely would be involved with \$600 million borrowing, the desk allowed borrowing to fall short of targetted levels in the process of leaning against a substantial spike in federal funds.

When the borrowing shift did not reverse itself, a formal adjustment of the reserve path was made, relying on the staff's best estimate of the relationship that had been emerging over previous maintenance periods. This change was discussed by the Committee in a conference call.

Subsequently, the desk has resumed a greater focus on the borrowing objective, but also has remained sensitive both to signs of further change in borrowing behavior and to the level of federal funds rate trading. The desk has always exercised some judgment on incoming borrowing totals--for example, how to treat borrowing arising out of unusual situations such as computer failures. It also has needed to take account of federal funds rate

1. This section was reviewed by Peter Sternlight.

levels in implementing policy, as indicators of underlying reserve conditions and to avoid misleading the market as to Federal Reserve intentions. When the borrowing relation is no more noisy than usual, fairly wide short-run variations in funds rates may be acceptable, because funds generally will gravitate to expected levels, and because the market has come to understand that short-run changes do not necessarily indicate a change in policy stance. Somewhat greater attention to the funds rate has seemed appropriate at the present time, in light of the continued heightened uncertainty about the longer-term borrowing relation as well as market expectations of a firming in Federal Reserve policy. Even so, there has been no attempt to constrain federal funds in a tight trading range, and as a result scope remains for market expectations and other factors affecting the supply and demand for reserves to show through in funds rates for a time.

STRICTLY CONFIDENTIAL (FR)
CLASS II - FOMC

BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM

Office Correspondence

Date December 9, 1988

To Donald Kohn

Subject: The Recent Discount Window

From Joshua Feinman and John Rea¹

Borrowing Shortfall

I. INTRODUCTION

Since early October, adjustment plus seasonal borrowing has declined substantially despite a large and widening spread between the federal funds rate and the discount rate. The magnitude and persistence of the shortfall has led the staff to make a judgmental downward adjustment of about \$300 million in its estimate of the level of borrowing consistent with a given rate spread. The recent pattern of borrowing has also led the staff to reconsider the formulation and estimation of the borrowing function more generally. In this context, the purposes of this memo are twofold: first, to describe various aspects of the recent decline in borrowing, and second, to discuss several possible explanations for the shortfall.

II. THE RECENT BORROWING SHORTFALL

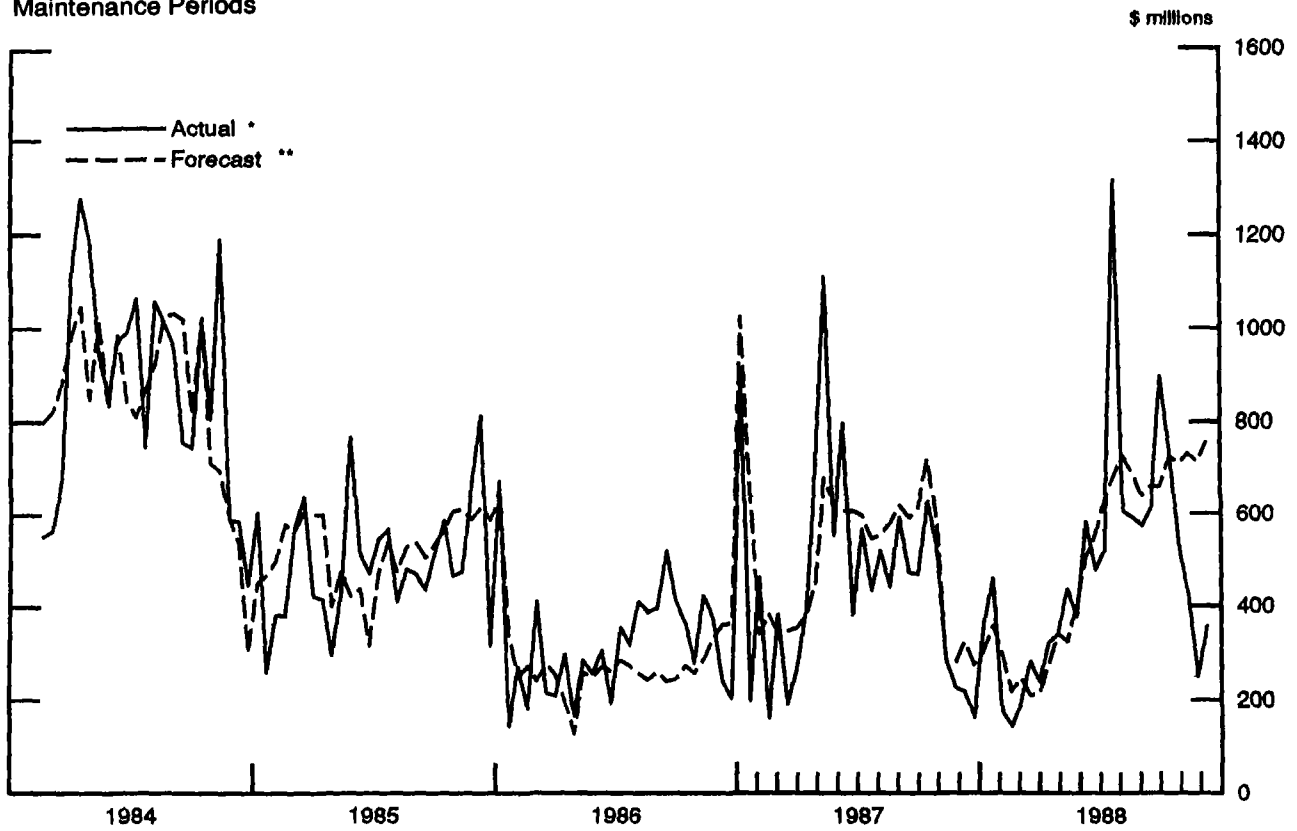
The general nature of the recent borrowing shortfall is illustrated in Figure 1, where actual and predicted borrowing are plotted for maintenance periods beginning in 1984 and ending with the most recent period, November 30, 1988. The forecasted values are from the staff's standard model that expresses borrowing primarily as a function of the

1. Doug Carpenter, Ken Kavajecz and Robert Sheppard provided invaluable research assistance and Gary Gillum and David Lindsey provided helpful comments.

Figure 1

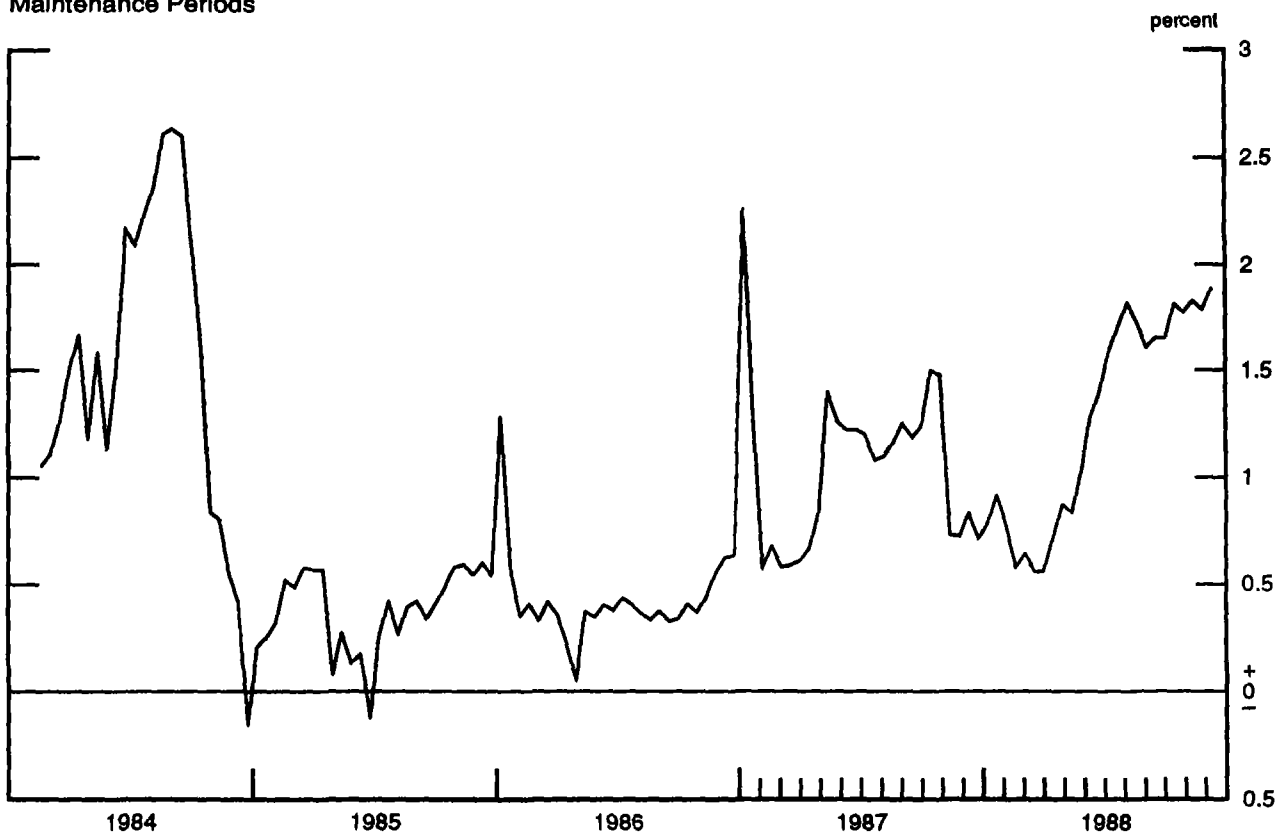
ALL INSTITUTIONS - ADJUSTMENT AND SEASONAL BORROWING

Maintenance Periods



SPREAD (FEDERAL FUNDS RATE - DISCOUNT RATE)

Maintenance Periods



* Excludes special situation borrowing.

** Based on model summarized in column 1 of Table A1 of the Appendix.

spread between the federal funds rate and the discount rate.² In the last four maintenance periods, (spanning the period ended October 19, 1988 through the period ended November 30, 1988) actual borrowing has fallen short of the forecast by an average of \$339 million -- exceeding the standard error of the model by a factor of more than two.³ The magnitude and persistence of these errors suggest that the recent borrowing shortfall can not be interpreted as random variation about the model's predictions. On the contrary, these data imply that the recent weakness in borrowing results from forces exogenous to the traditional model.

The weakness in borrowing over the past two months has been spread across institutions of all size classes. This can be seen by referring to Figures 2-4, which show the actual and predicted levels of borrowing for large institutions with deposits exceeding \$3 billion, for medium-size institutions with deposits between \$1 billion and \$3 billion,

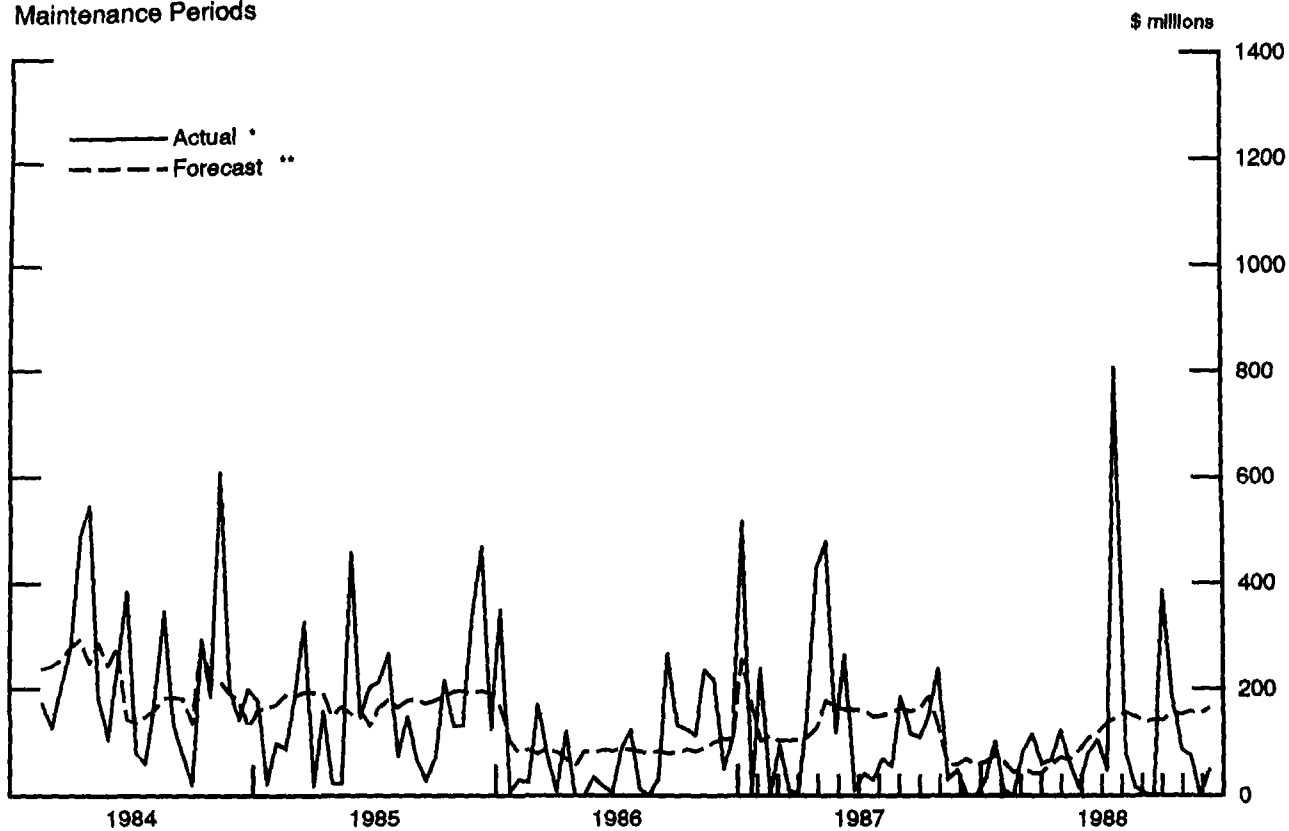
2. The estimated model, shown in column 1 of Table A1 of the Appendix, is based upon work by James Glassman ("The Discount Window Borrowing Function," Memorandum dated June 22, 1987), David E. Lindsey and Gary Gillum ("Treatment of Special Situation and Seasonal Borrowings in Desk Operations," Memorandum dated October 29, 1987) and David E. Lindsey and James Glassman ("A Review of the Relation of the Funds Rate and Intended Discount Borrowing," Memorandum dated July 1, 1987). The estimation technique is instrumental variables, with the Desk's expected funds rate at the start of the maintenance period proxying for the actual funds rate. The model used for the forecasts of adjustment plus seasonal borrowing at all institutions plotted in Figure 1 does not include seasonal dummies, which were found to be jointly insignificant (see column 2 of Table A1). The sample used to estimate the model begins with the February 15, 1984 maintenance period, which marks the start of contemporaneous reserve requirements, and ends with the September 7, 1988 maintenance period. Actual borrowing excludes special situation borrowing arising primarily because of computer problems. This type of borrowing was \$145 million and \$343 million in the November 16 and November 30 maintenance periods, respectively.

3. The standard error of the basic model, as reported in column 1 of Table A1 of the Appendix, is \$161 million.

Figure 2

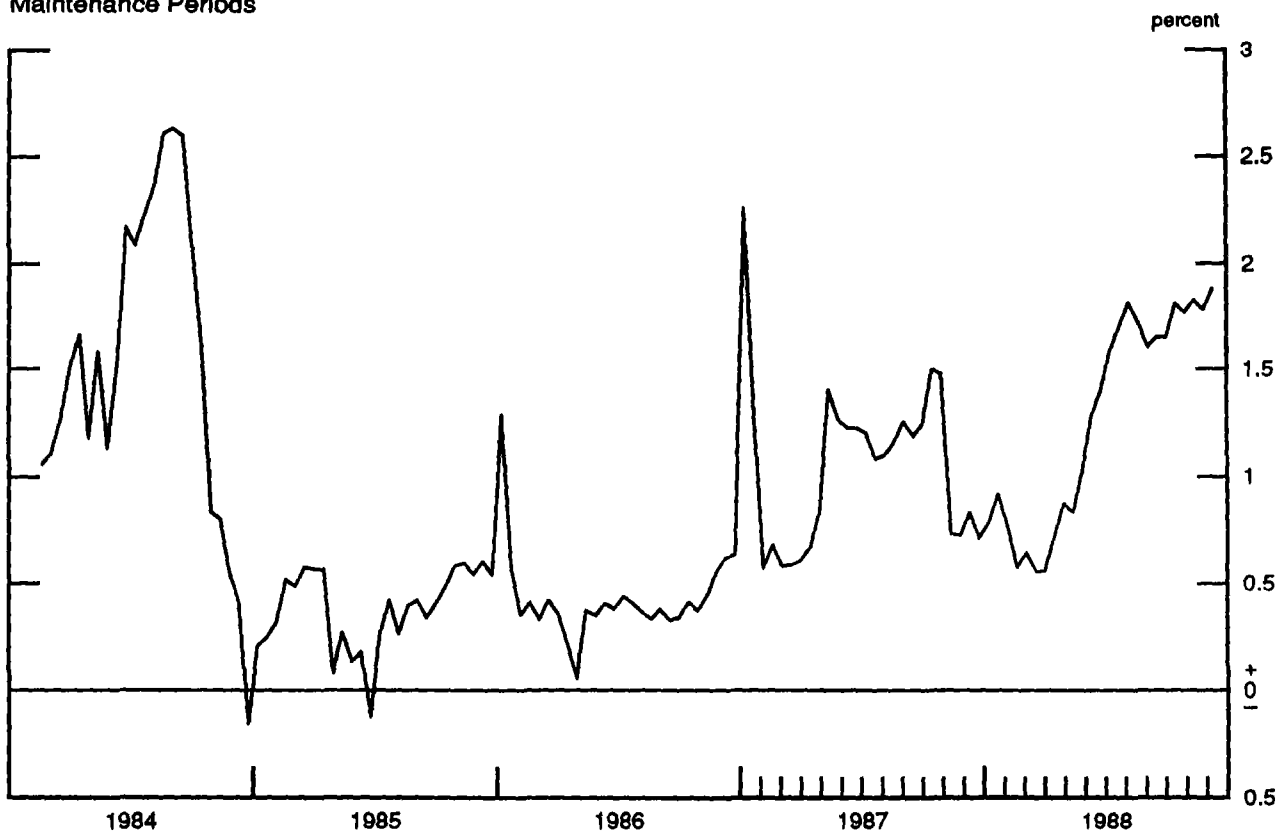
BORROWING BY LARGE INSTITUTIONS

Maintenance Periods



SPREAD (FEDERAL FUNDS RATE - DISCOUNT RATE)

Maintenance Periods



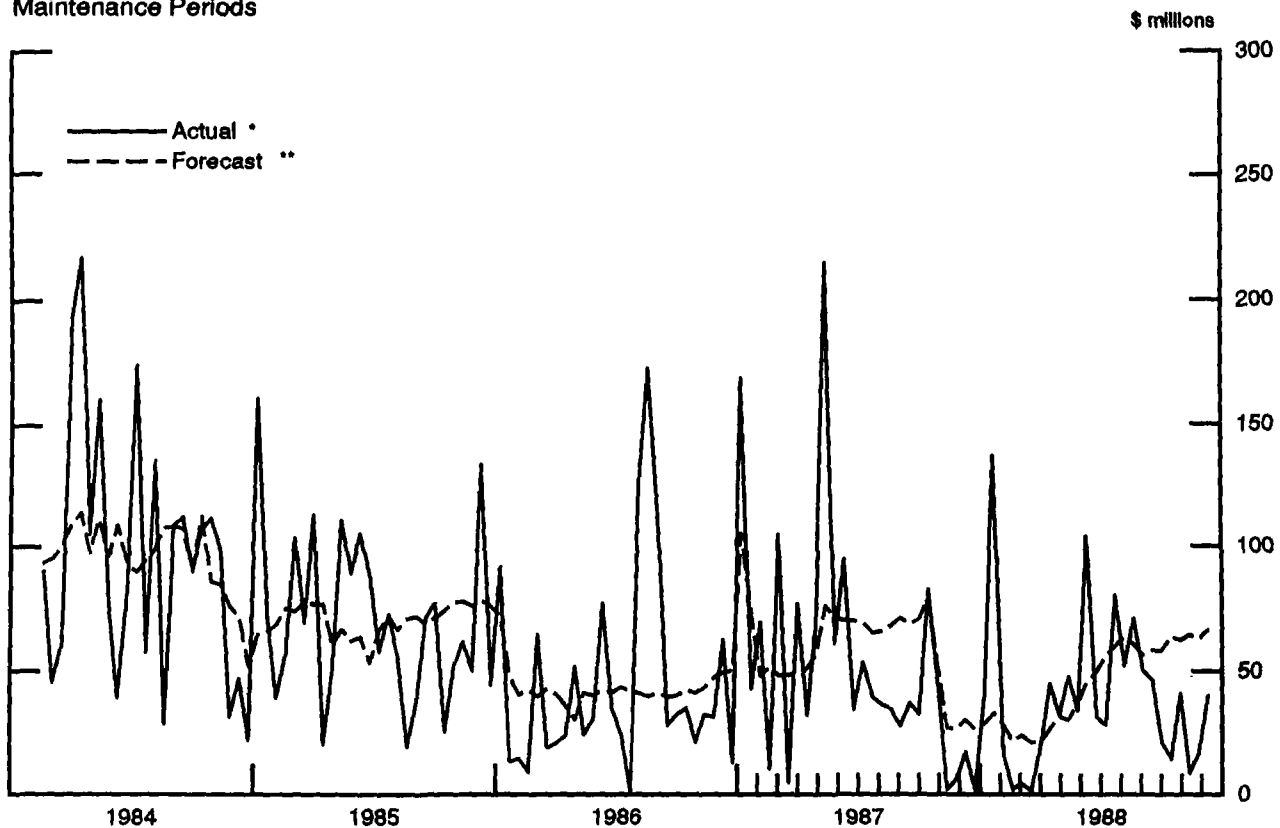
* Excludes special situation borrowing.

** Based on model summarized in column 1 of Table A2 of the Appendix.

Figure 3

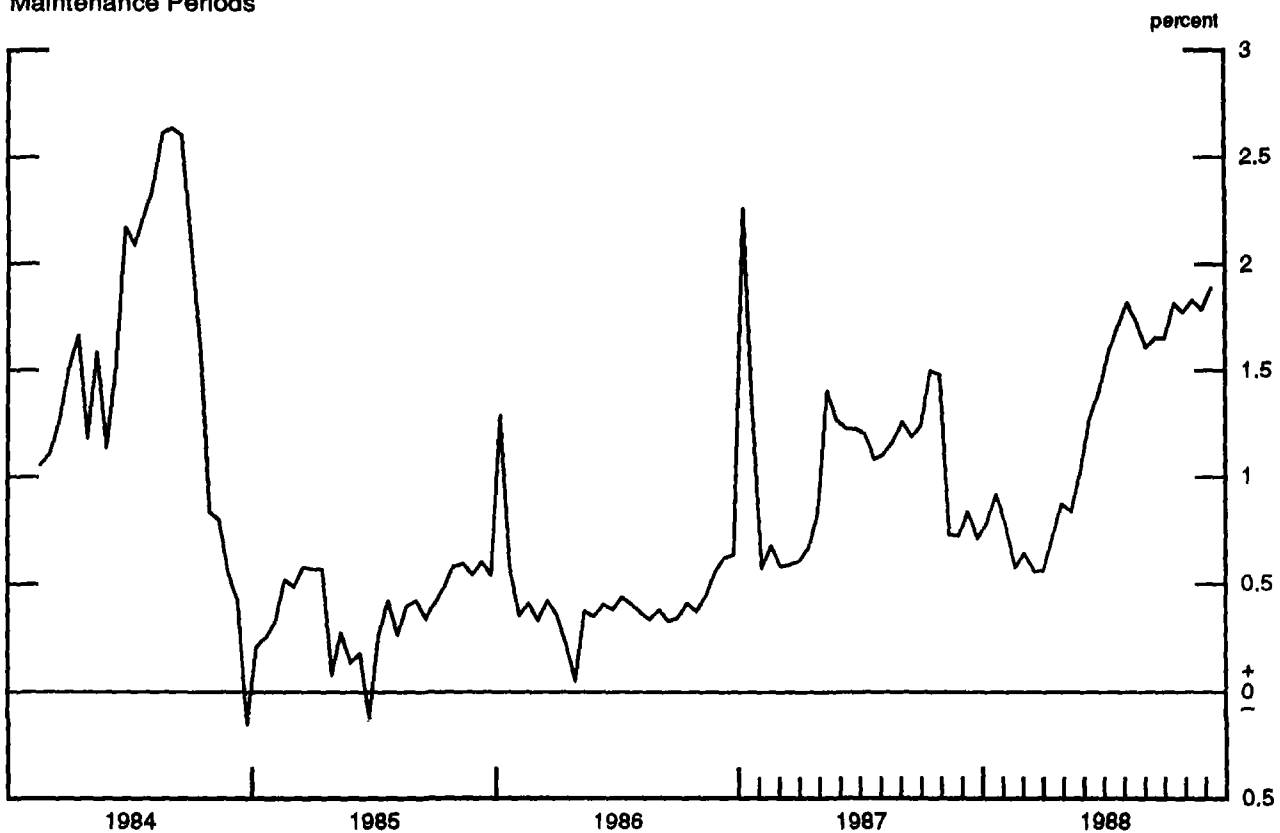
BORROWING BY MID-SIZE INSTITUTIONS

Maintenance Periods



SPREAD (FEDERAL FUNDS RATE - DISCOUNT RATE)

Maintenance Periods



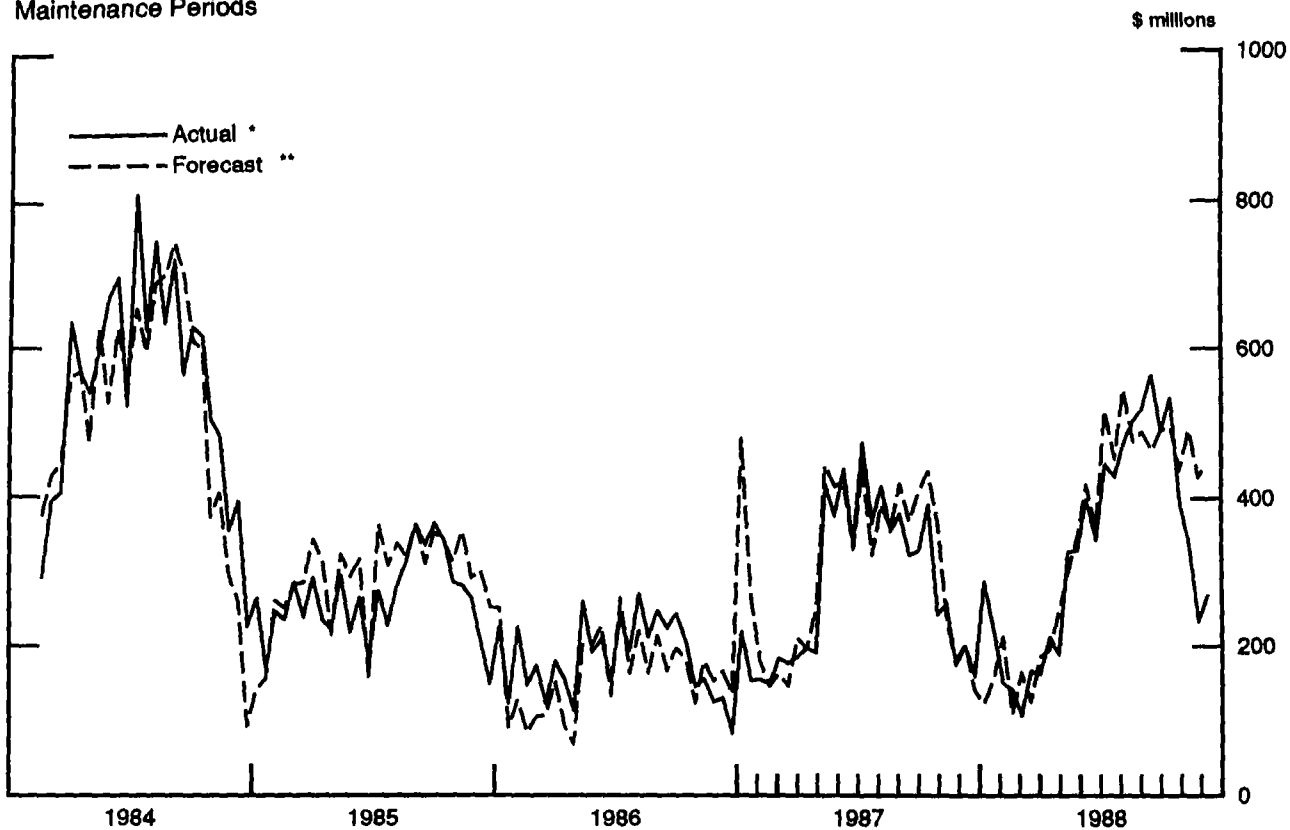
* Excludes special situation borrowing.

** Based on model summarized in column 1 of Table A3 of the Appendix.

Figure 4

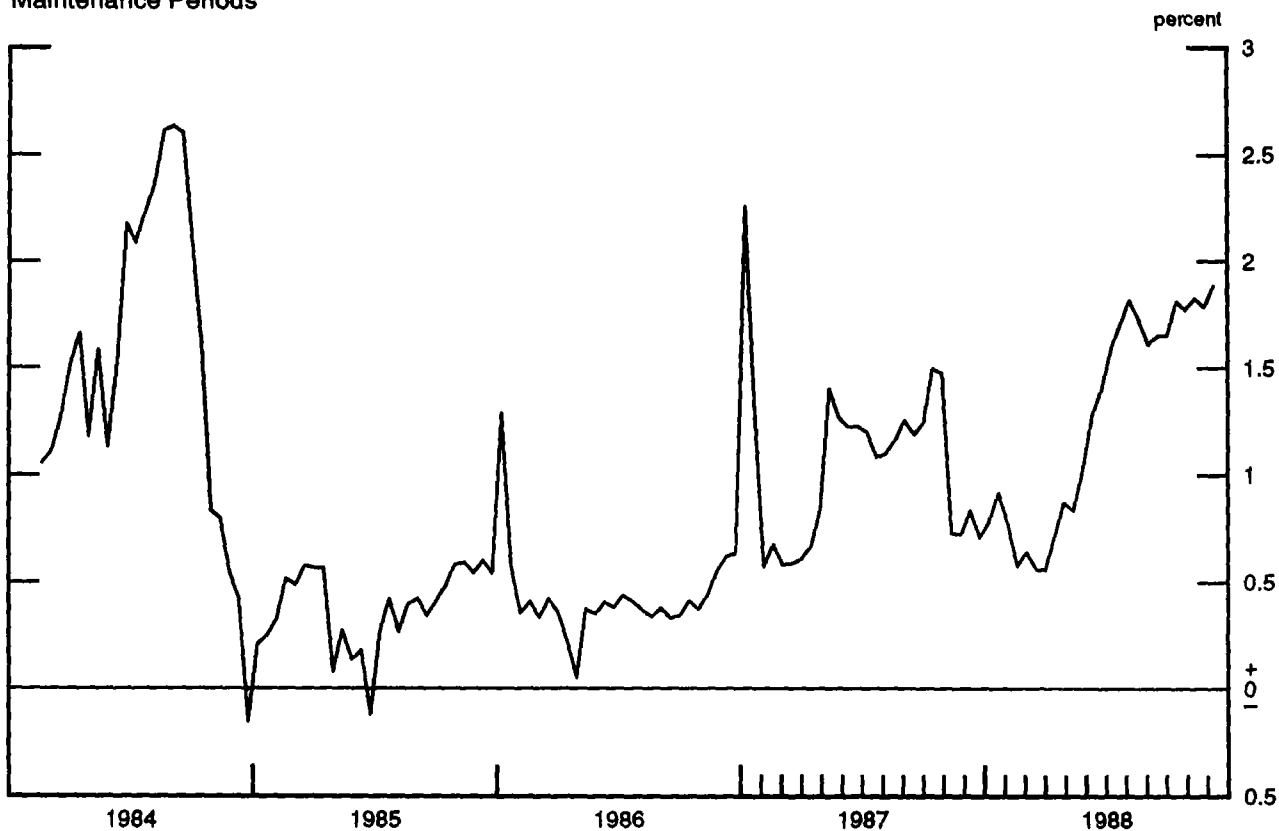
ADJUSTMENT AND SEASONAL BORROWING BY SMALL INSTITUTIONS

Maintenance Periods



SPREAD (FEDERAL FUNDS RATE - DISCOUNT RATE)

Maintenance Periods



* Excludes special situation borrowing.

** Based on model summarized in column 2 of Table A4 of the Appendix.

and for small institutions with deposits under \$1 billion, respectively.⁴ Borrowing by small institutions includes both adjustment and seasonal credit, whereas borrowing by institutions in the other two categories is confined to adjustment credit because these institutions are too large to qualify for the seasonal program.⁵ As can be seen in these figures, borrowing in each institutional class has fallen short of the model's predictions in the last four maintenance periods. Furthermore, as evidenced by Table 1, the recent falloff in borrowing has not been confined to any specific Federal Reserve district.

Additional insight into recent developments in small institution borrowing can be gained by separating seasonal credit from small institution adjustment borrowing, as is done in Figures 5 and 6. These figures show that the weakness in small institution adjustment credit actually began in mid-June, preceding the falloff in borrowing by larger institutions by nearly three months. Throughout the summer, however, this weakness was masked by surprising strength in seasonal borrowing that may

4. This classification corresponds to the categories used by the district Federal Reserve Banks in their borrowing reports. The small institutions can be further divided at \$200 million of deposits, but this breakdown has not been found to be useful for purposes of estimating the borrowing function.

5. Seasonal borrowing contains a significant seasonal pattern (see Table A6 of the Appendix), which shows through in small bank adjustment plus seasonal (see Table A4 of the Appendix). Therefore, the forecasts for small institution adjustment plus seasonal borrowing depicted in Figure 4 correspond to the model summarized in column 2 of Table A4 of the Appendix, which includes seasonal dummy variables. Seasonal dummies are not included in the forecasts for the other categories of institutions, plotted in Figures 2 and 3, or in the aggregate equation, charted in Figure 1, because these dummies were found to be jointly insignificant in the models summarized in Tables A1 - A3 of the Appendix.

Table 1

Average Adjustment Borrowing
Selected Reserve Maintenance Periods in 1988

| Reserve District | Reserve Maintenance Periods Ending: | |
|---|-------------------------------------|-----------------------------|
| | July 27 - October 5 | October 19 - November 30 |
| Boston | 16 | 14 |
| New York | 70 | 6* |
| Philadelphia | 45 | 27 |
| Cleveland | 23 | 12 |
| Richmond | 2 | 9 |
| Atlanta | 9 | 12 |
| Chicago | 24 | 16* |
| St. Louis | 10 | 8 |
| Minneapolis | 8 | 4 |
| Kansas City | 13 | 13 |
| Dallas | - | 1 |
| San Francisco | 30 | 23 |
| System Totals** | 252 | 144* |
| MEMO: Average Spread of the Federal Funds Rate over the Discount Rate | 1.71 | 1.82 |

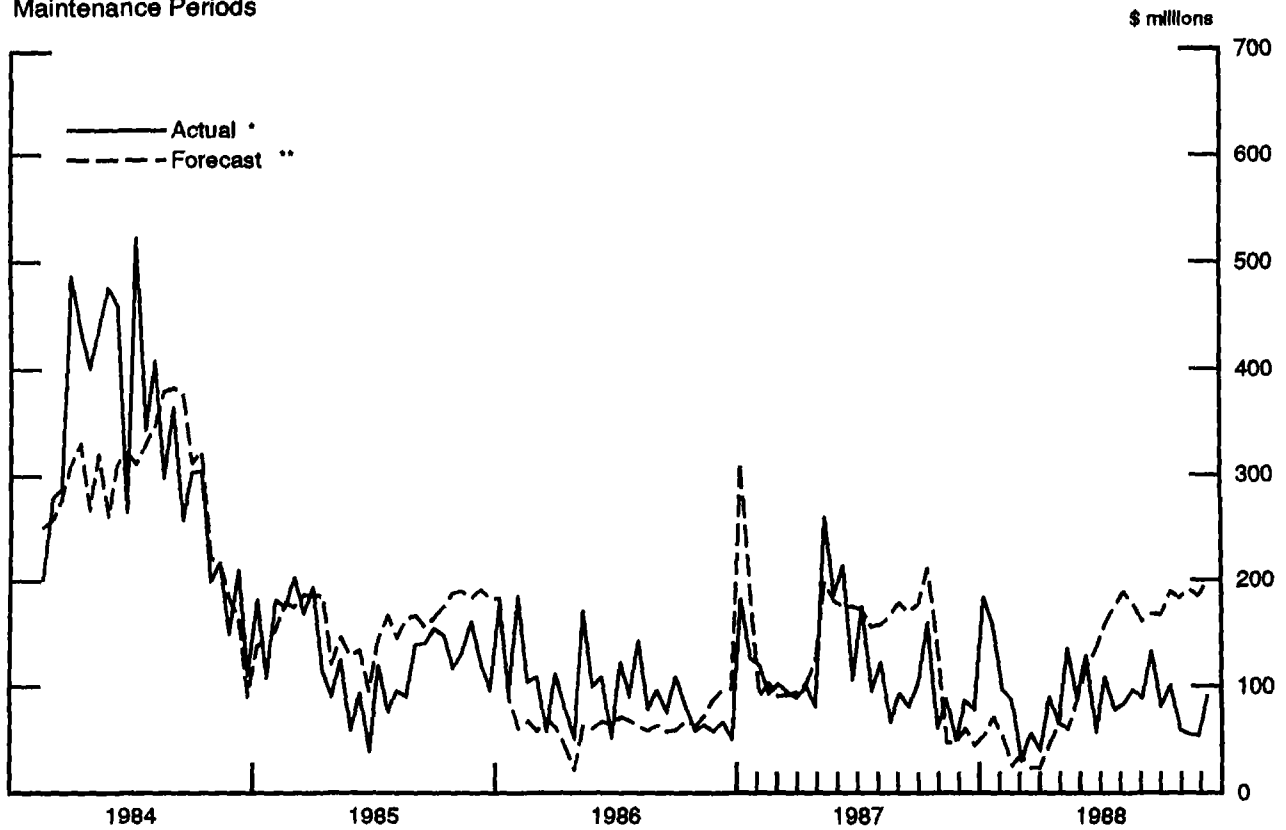
*--Adjusted for special situation borrowing arising from computer operating problems at banks.

**--System totals may not add due to rounding.

Figure 5

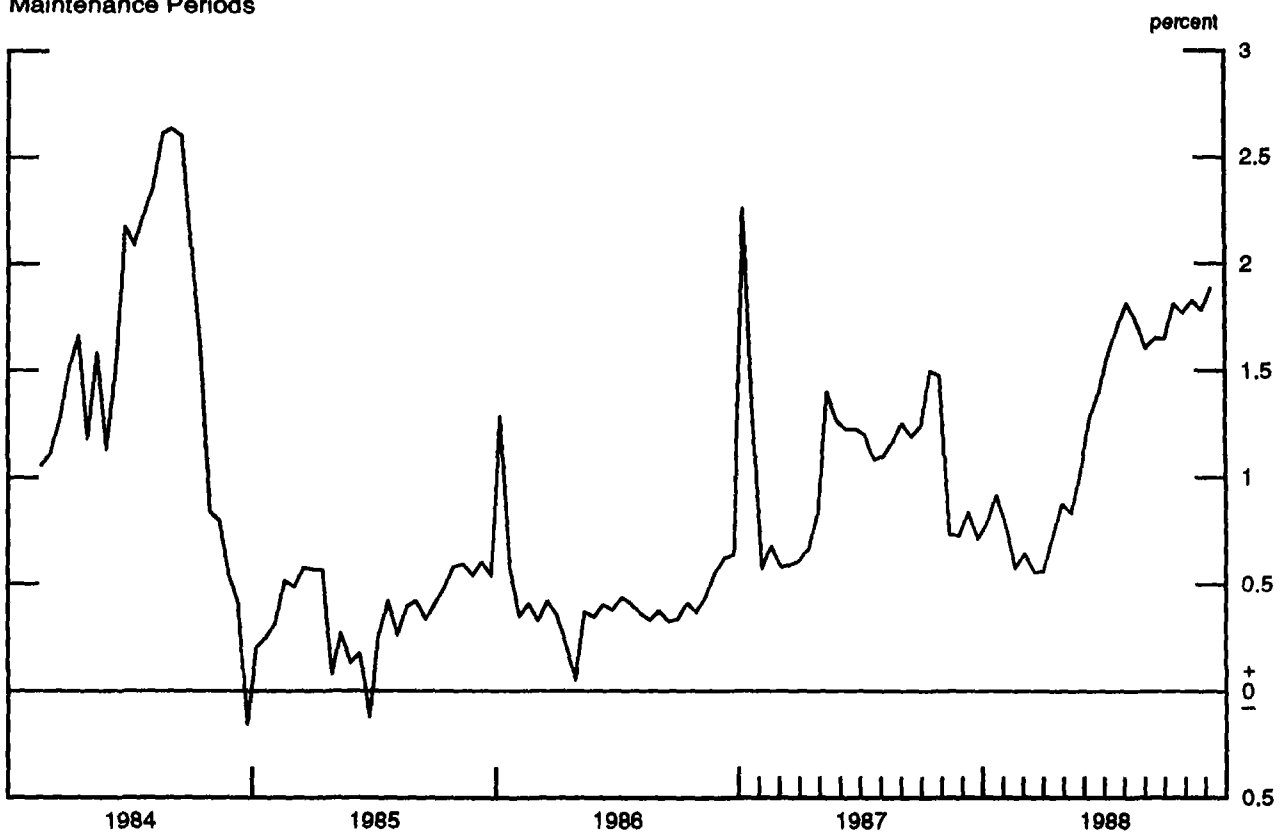
ADJUSTMENT BORROWING BY SMALL INSTITUTIONS

Maintenance Periods



SPREAD (FEDERAL FUNDS RATE - DISCOUNT RATE)

Maintenance Periods



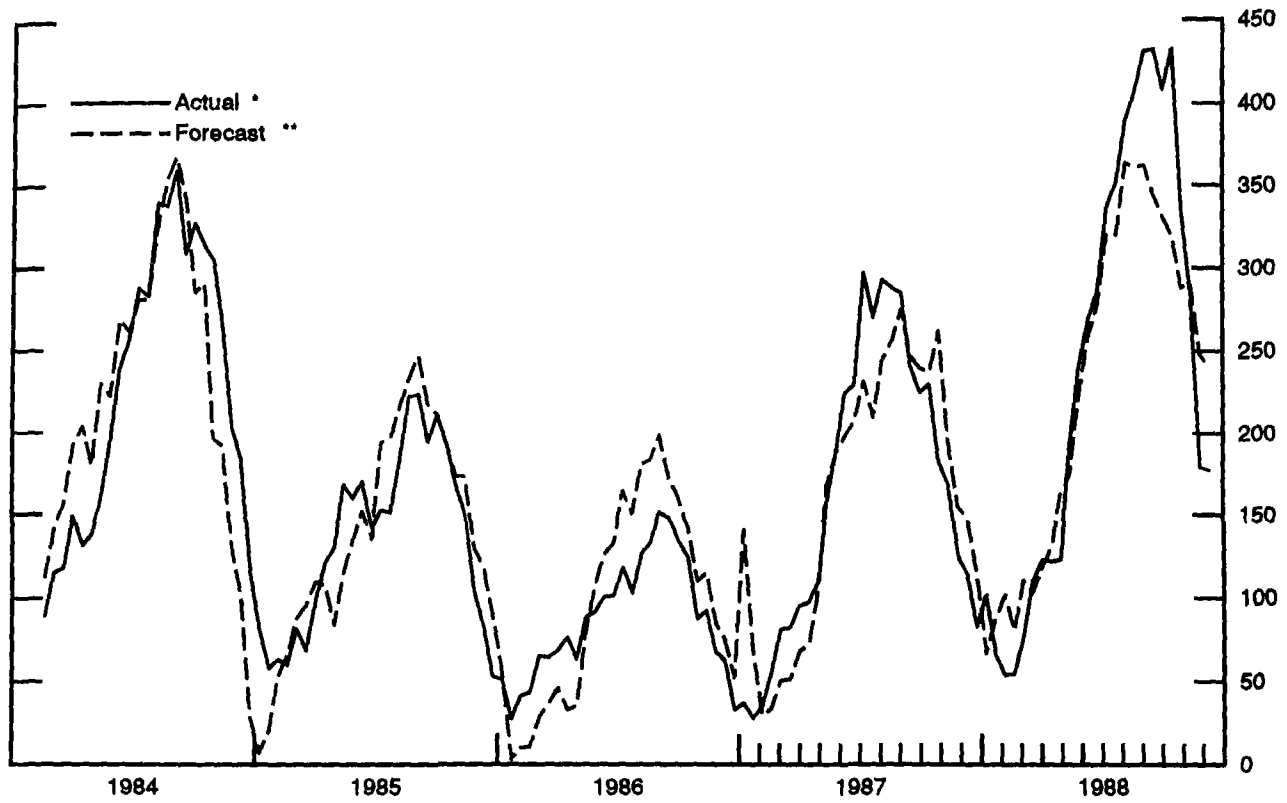
* Excludes special situation borrowing.

** Based on model summarized in column 1 of Table A5 of the Appendix.

Figure 6

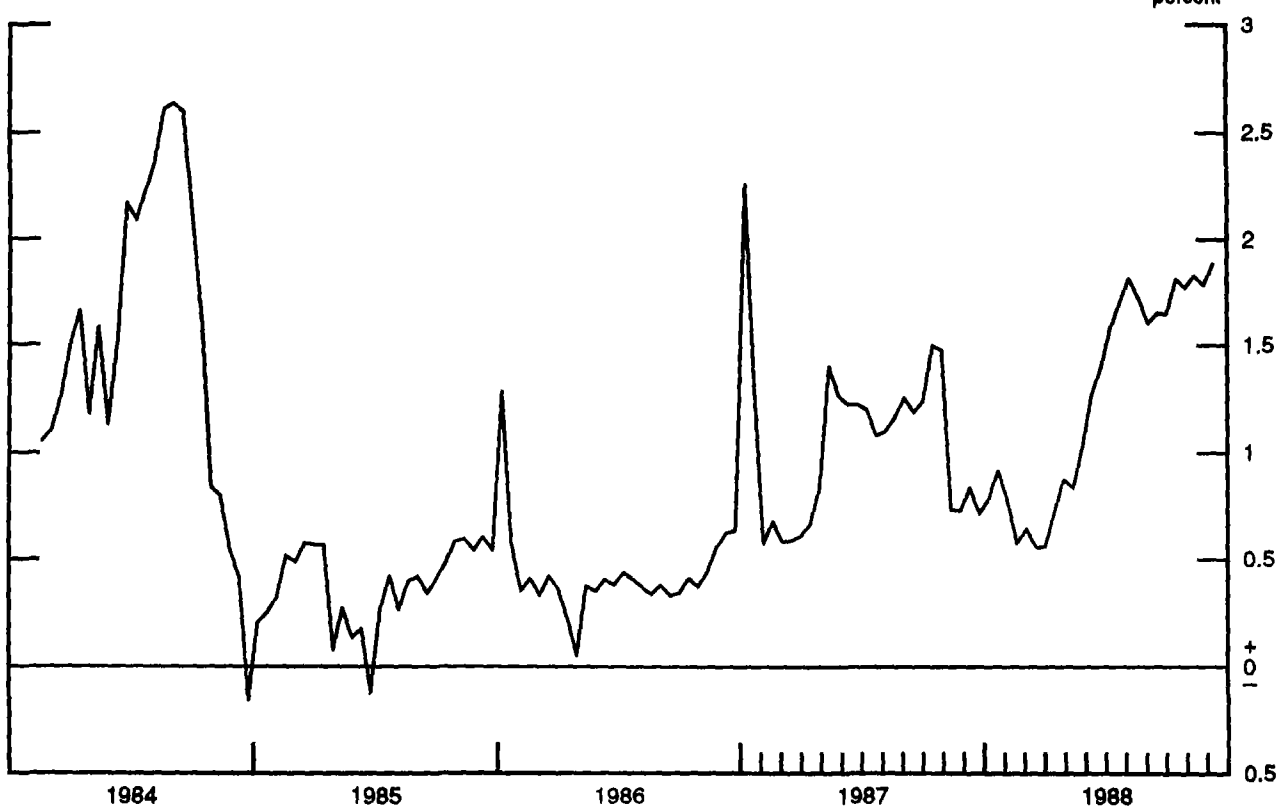
SEASONAL BORROWING

Maintenance Periods



SPREAD (FEDERAL FUNDS RATE - DISCOUNT RATE)

Maintenance Periods



* Excludes special situation borrowing.

** Based on model summarized in column 2 of Table A6 of the Appendix.

have been associated with improved conditions in the farm economy. Only in the last few months, as seasonal borrowing has begun to fall, has the weakness in small institution adjustment credit shown through in total small institution borrowing (Figure 4). The relative magnitude and duration of the weakness in small institution adjustment borrowing suggests that in addition to whatever may have caused the shortfall in borrowing across all institutions, some developments peculiar to small institutions may be at work as well.⁶

III. POSSIBLE EXPLANATIONS FOR THE RECENT BORROWING SHORTFALL

In part, the recent decline in borrowing may be an extension of a longer-term trend toward less borrowing for a given rate spread that has been evident at least since 1984. Through August of this year, empirical analysis had isolated two discrete, permanent, downward shifts in the borrowing function, the first of which occurred in early 1986 and the second of which occurred in 1987 after the stock market crash.⁷ The growing reluctance to tap discount window credit over the past five years can be seen in Figure 7, where the total number of institutions borrowing adjustment credit per maintenance period is shown together with the rate spread. Although spreads are not quite as high this year as in 1984, the

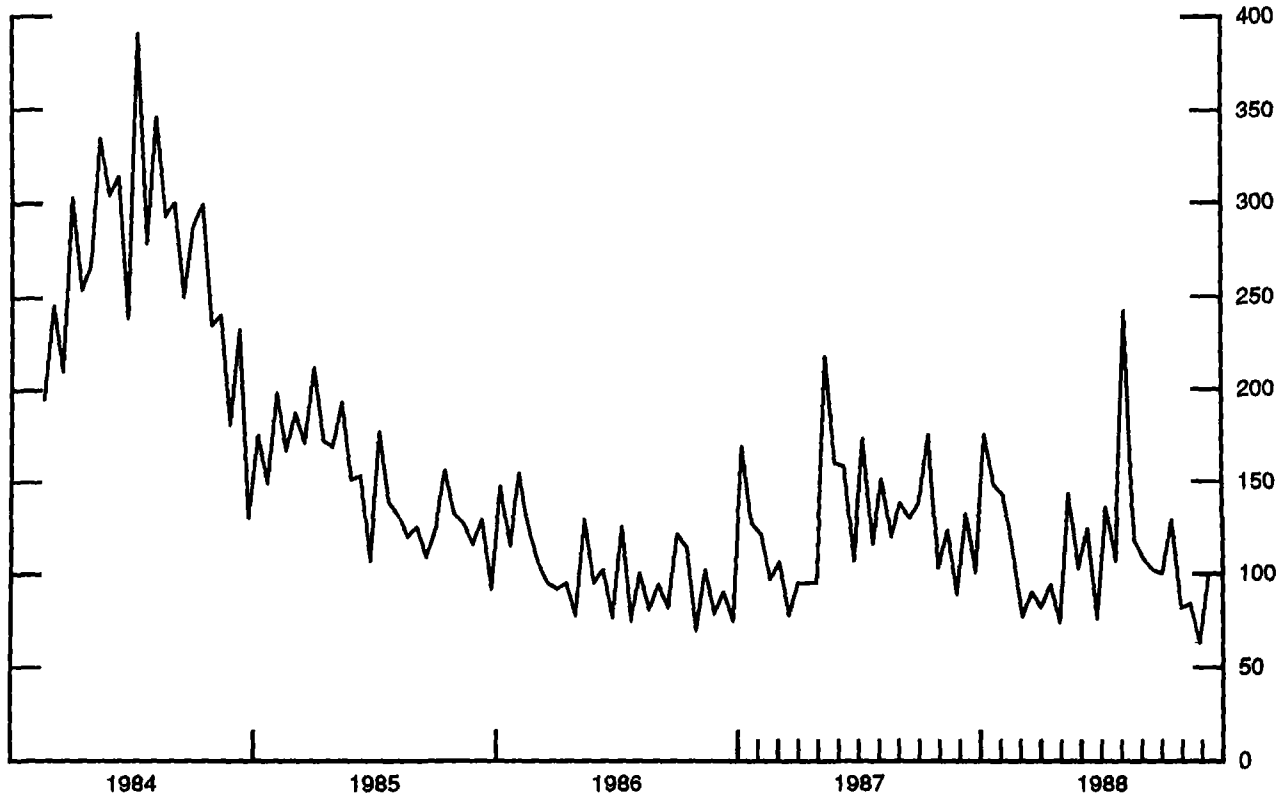
6. The basic model has underestimated adjustment borrowing by small institutions in each of the last thirteen maintenance periods. The average forecast error over this period is 1.5 times the standard error of the model, which is especially noteworthy because the first nine of these periods are included in the estimation of the model.

7. A temporary shift also occurred in the summer of 1984, in conjunction with the Continental Illinois crisis. The results summarized in the Appendix indicate the magnitude and the significance of each of these shifts for all categories of institutions.

Figure 7

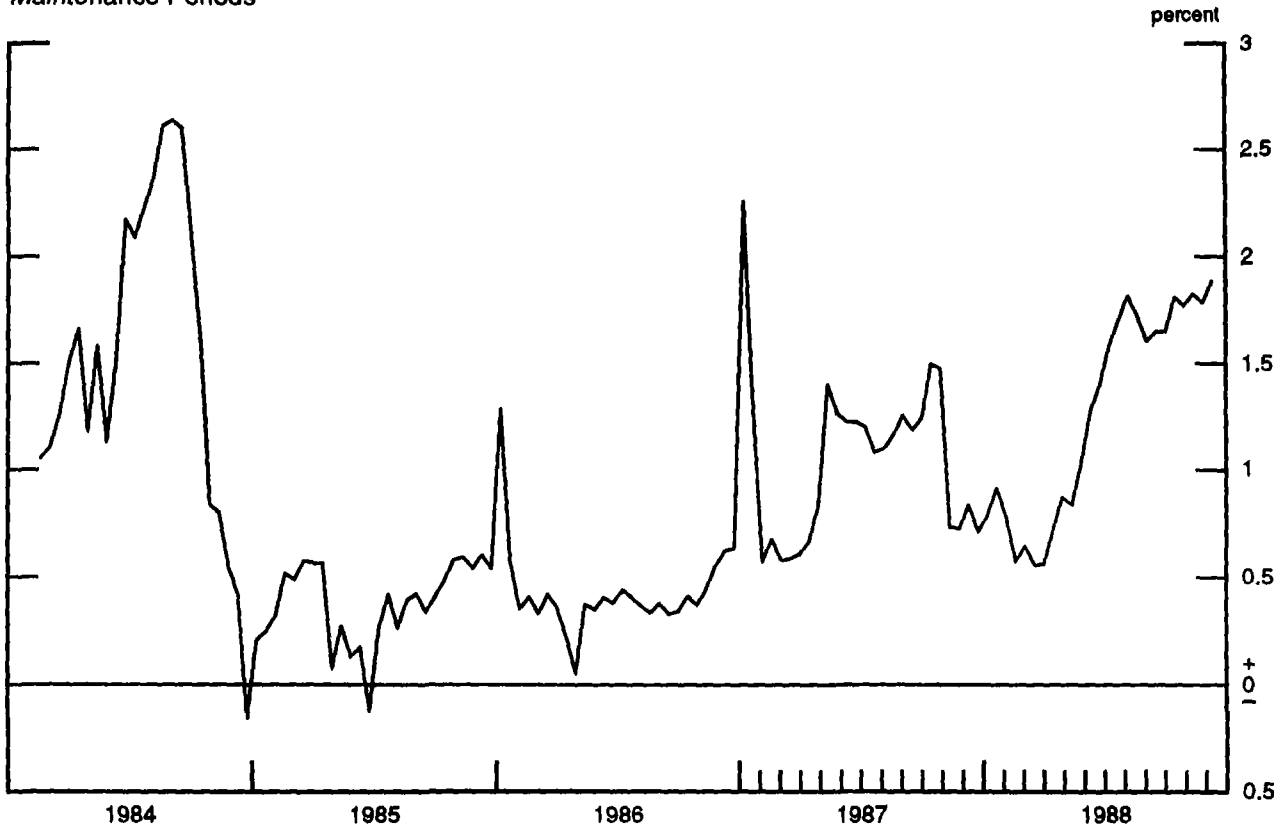
NUMBER OF ADJUSTMENT CREDIT BORROWERS

Maintenance Periods



SPREAD (FEDERAL FUNDS RATE - DISCOUNT RATE)

Maintenance Periods



decline in the number of institutions turning to the window for adjustment credit is striking. On the other hand, Figure 8, which plots the average amount of adjustment credit borrowing per borrower over the past five years, indicates that institutions are borrowing at least as much each time they turn to the window as they did in 1984. Taken together, these data suggest that institutions have become increasingly hesitant to use the borrowing facility, but when they do borrow, the dollar amount is similar to borrowing levels seen in previous years.

The persistent downward shifts in the borrowing function, coupled with the relatively poor explanatory power of the function, especially for larger institutions, suggest that factors other than the current level of the spread may be important influences on borrowing behavior.⁸ The remainder of this memo focuses on some possibilities in this regard, with particular emphasis on possible explanations of the most recent developments.

Influence of dynamic considerations

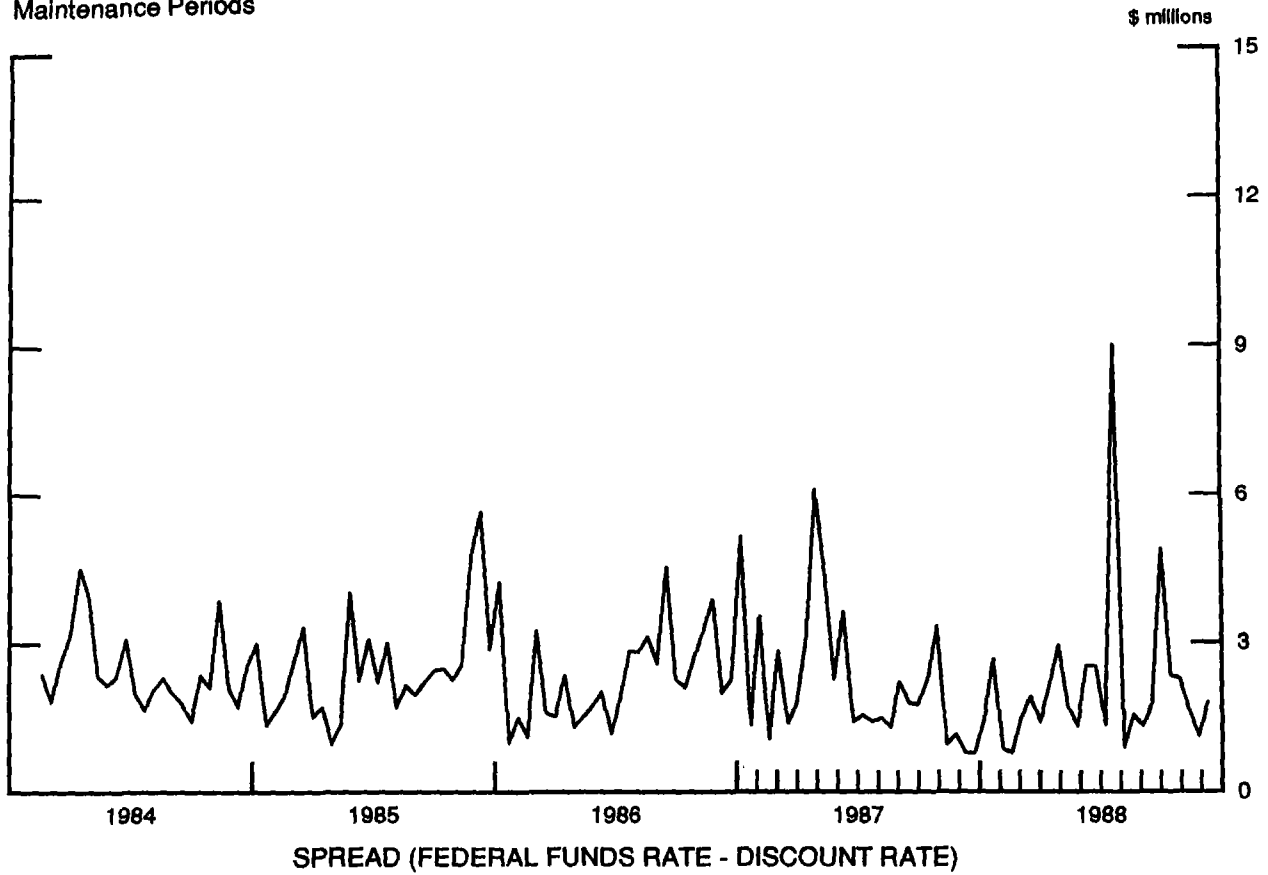
The shortfall in borrowing over the past few months may reflect, in part, the efforts of banks to husband their borrowing privilege. In theory, the relationship between borrowing and the spread between the funds rate and the discount rate is an artifact of the non-price rationing

8. As measured by R-Squares and standard errors, the borrowing function has particularly little explanatory power for large and mid-size institutions. Although the basic function fits considerably better when applied to small institutions and to aggregate borrowing, the regressions for smaller institutions are plagued by serially correlated residuals. See the tables in the Appendix for details.

Figure 8

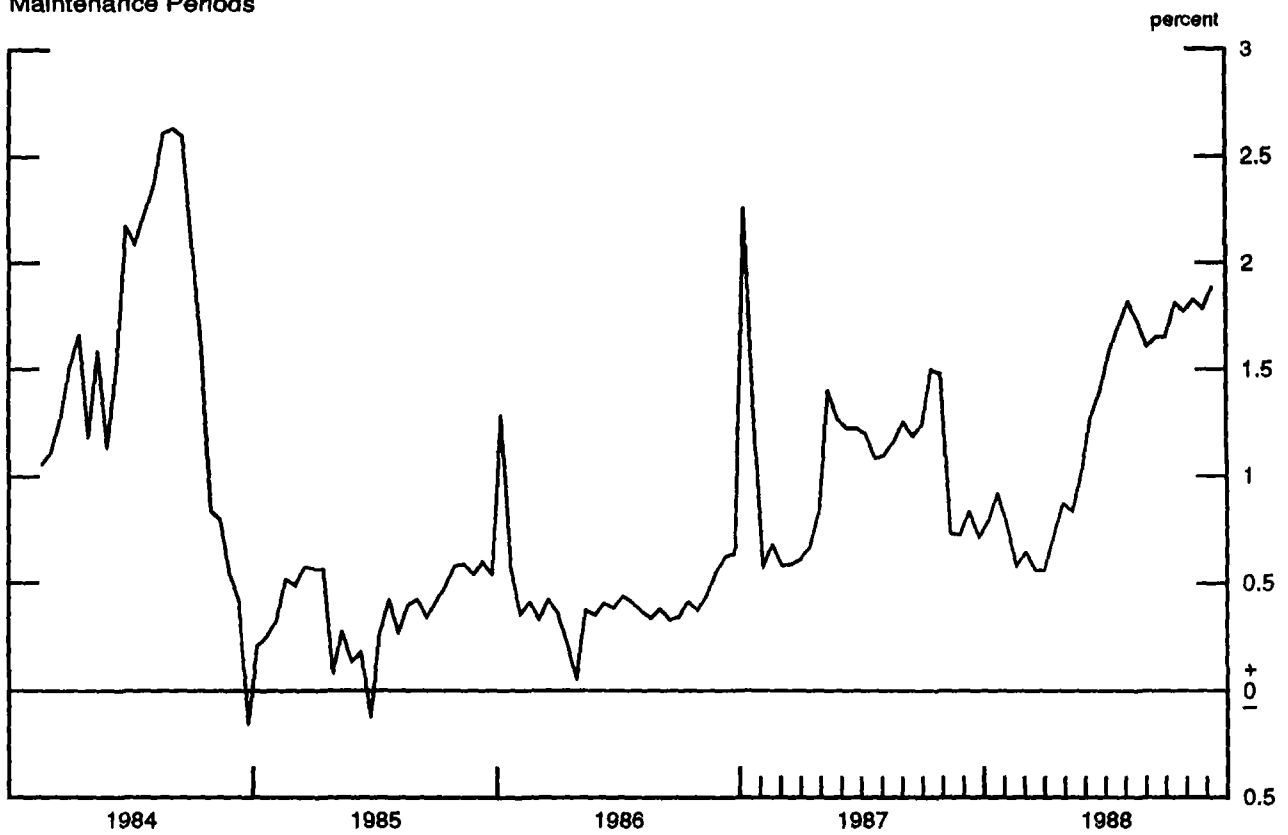
AVERAGE ADJUSTMENT BORROWING PER BORROWER¹

Maintenance Periods



SPREAD (FEDERAL FUNDS RATE - DISCOUNT RATE)

Maintenance Periods



1. Excludes special situation borrowing.

mechanism used to administer the discount window. Since this mechanism is designed, at least in part, to discourage persistent use of the borrowing facility, each bank faces a marginal cost of borrowing that consists of the discount rate plus a non-pecuniary cost which increases with the length of the bank's current stay in the window, and the frequency of borrowing over a given period in the past. This cost structure implies that a profit-maximizing bank's decision to borrow should depend not only upon the current spread, but also upon expected future spreads, and the bank's recent use of the borrowing privilege. The more frequently a depository institution has borrowed in the past, the greater the marginal cost of current borrowing and, hence the less inclined the institution will be to turn to the window today. Similarly, the higher the spread expected to prevail in the future, the more banks will want to borrow in the future. Since frequent borrowing is discouraged, this expectation will make banks less inclined to borrow today. This line of reasoning suggests that expected future spreads and recent frequency of use of the window may be useful explanatory variables in the borrowing function.⁹

Since the administration of the discount window is keyed in part to the size of the borrowing institution, a priori one would expect that dynamic considerations would have different effects on banks of different size classes. As evidenced by Figure 2 and by the results summarized in Table A2 of the Appendix, the standard borrowing function has been a

9. To date, however, staff efforts to measure such influences econometrically, through the use of lagged borrowing or measures of expected future rate spreads, have not been very successful in improving our understanding of borrowing behavior.

particularly poor vehicle for explaining the borrowing behavior of large institutions. Because the discount window is administered more rigidly for large banks -- who are presumed to have a greater range of funding alternatives -- large, sophisticated institutions may be more inclined to take account of lagged borrowing and expected future rate spreads when making their borrowing decisions.¹⁰

Both types of dynamic influences may have affected large bank borrowing over the past four maintenance periods. Surges in borrowing on settlement day in the maintenance periods ending September 21 and October 5, associated with achieving the \$600 million borrowing objective, may be partly responsible for the subsequent greater reluctance of large banks to borrow. Since early November, large banks may also have curbed their use of the window in anticipation of widening spreads owing to policy tightening, year-end pressures and effects of surges in LBO financing. These dynamic considerations, however, are unlikely to be an important factor in explaining the large and persistent shortfall in adjustment borrowing by smaller institutions since June.

10. Another problem arises when estimating large bank borrowing because large banks, as the residual borrowers in the banking system, use the discount window predominantly, though not exclusively, on settlement day afternoons. Consequently, the maintenance period average federal funds rate is probably a poor measure of the opportunity cost of borrowing for large institutions. However, recent staff efforts to include the settlement day spread in the standard borrowing function for large banks did little to improve the explanatory power of the estimated equation, although this spread was found to be statistically significant.

Seasonal Influences

Part of the recent apparent downward shift in borrowing may be due to the sharp drop in seasonal borrowing in the last two maintenance periods from unusually high summer levels. Figure 6 and Table A6 of the Appendix show clearly the significant seasonal pattern in seasonal borrowing -- a pattern which emerges, albeit to a lesser extent, in total seasonal and adjustment credit at small institutions (see Figure 4 and Appendix Table A4).¹¹ As evidenced by Appendix Table A1, however, no statistically significant seasonal pattern exists in the adjustment plus seasonal borrowing relationship for all institutions. These results suggest that other factors influencing the borrowing behavior of larger banks swamp the seasonal patterns at small institutions and that small institutions do not view seasonal and adjustment borrowing as close substitutes.

The unpredicted falloff in small bank adjustment credit over the past four months does not, therefore, seem to be the result of the unexpectedly high levels of seasonal borrowing seen this summer and fall. Moreover, the failure of small bank adjustment borrowing to rebound in the face of an unexpectedly sharp runoff in seasonal credit in the past two

11. Since seasonal borrowing is related primarily to the financing needs of small agricultural banks, it generally follows the agricultural cycle, reaching a harvest-season peak in the third quarter and a trough early in the first quarter. Seasonal borrowing is also responsive to the rate spread, although clearly less so than adjustment borrowing. Given the longer-term nature of the financing needs supported by the seasonal program, lagged as well as current spreads may be an important determinant of seasonal borrowing. Preliminary work in this area lends credence to this hypothesis.

maintenance periods reinforces the view that these two forms of borrowing are not close substitutes.

The higher levels of seasonal borrowing seen this summer and fall may be related to the liberalization of the seasonal borrowing program in 1985. Although the new criteria for qualifying for seasonal credit were enacted in 1985, a surge in seasonal borrowing did not materialize in 1985 and 1986 because of weak loan demand in the farm economy. In the past two years, however, as the farm economy has recovered somewhat, increases in loan demand may have led banks to make greater use of the more liberal seasonal credit program. This type of argument suggests that an explanation for the recent puzzling behavior of small bank borrowing may lie in a closer examination of the balance sheets of small institutions.

Changes in the Liquidity of Small Institutions

Under present discount window guidelines, small institutions are permitted to borrow more frequently and for longer periods of time than are large institutions. This difference presumably reflects the inability of small institutions to alter rapidly their lending and deposit-taking activity in response to largely exogenous changes in their liquidity. Thus, as suggested by some discount window officers in their November conference call, the shortfall in adjustment borrowing by small institutions perhaps reflects a significant and unanticipated increase in their liquidity.¹²

12. See attached memorandum by Gary Gillum, "Result of Conference Call of Discount Officers on November 17."

To examine this possibility, selected assets and liabilities were obtained for the 840 banks that report weekly to the Federal Reserve and had less than \$1 billion of deposits as of March 30, 1988. Of these banks, 99 had borrowed at some point between between March 30 and November 2, 1988 and 741 had not. Sales of federal funds and loan-deposit ratios were used to measure changes in bank liquidity positions, with an increase in federal funds sold and a decrease in the loan-deposit ratio presumably indicating greater liquidity.

Data are shown in Table 2 as averages for the four-week periods ended June 1, September 7, and November 2. June 1 was selected because it roughly marks the start of the shortfall in adjustment borrowing by small institutions, while September 7 represents the date after which the forecast errors from the standard borrowing equation for small institutions increase in magnitude.

The data present a mixed picture regarding changes in bank liquidity positions. For the nonborrowing banks, increasing sales of federal funds point to greater liquidity, while a rising loan-deposit ratio indicates less liquidity. This information provides little insight into the failure of these institutions to turn to the window. In the case of the borrowing banks, the increase in the loan-deposit ratio, together with a slight decline in federal funds sold, is consistent with their increased borrowing from June to September. Since September, however, rising sales of fed funds and an even sharper increase in the loan-deposit ratio, provide no clear reasons for their reduced borrowing. On balance,

Table 2

Characteristics of Small Bank Adjustment Credit Borrowers¹
June 1, 1988 to November 2, 1988
(not seasonally adjusted)

| | Average of 4-Weeks Ended (millions of dollars) | | | Change (millions of dollars) | | Annualized Growth Rate | |
|--|---|----------------|---------------|---------------------------------|---------------------|---------------------------|---------------------|
| | June 1 | Sept. 7 | Nov. 2 | June 1 to Sept.7 | Sept. 7 to Nov.2 | June 1 to Sept.7 | Sept. 7 to Nov.2 |
| | <u>June 1</u> | <u>Sept. 7</u> | <u>Nov. 2</u> | <u>to Sept.7</u> | <u>to Nov.2</u> | <u>to Sept.7</u> | <u>to Nov.2</u> |
| 99 Banks with Adjustment Credit Borrowing | | | | | | | |
| Net Loans | 47,196 | 48,557 | 49,212 | 1,361 | 655 | 9.4 | 8.8 |
| Net Loans plus Investments | 64,689 | 66,362 | 66,969 | 1,673 | 607 | 8.4 | 5.9 |
| Total Deposits | 60,092 | 61,596 | 61,999 | 1,504 | 403 | 8.1 | 4.3 |
| Federal Funds Sold | 2,050 | 2,043 | 2,259 | -7 | 216 | -1.1 | 68.7 |
| Adjustment Borrowing | 64 | 69 | 31 | 5 | -38 | | |
| Net Loans/Total Deposits (percent) | 78.5 | 78.8 | 79.4 | .3 | .6 | | |
| 741 Banks with No Adjustment Credit Borrowing | | | | | | | |
| Net Loans | 250,215 | 261,771 | 269,852 | 11,556 | 8,081 | 15.0 | 20.1 |
| Net Loans plus Investments | 330,107 | 345,385 | 353,864 | 15,278 | 8,479 | 15.0 | 16.0 |
| Total Deposits | 306,017 | 317,095 | 325,157 | 11,078 | 8,062 | 11.8 | 16.5 |
| Federal Funds Sold | 14,929 | 15,403 | 16,553 | 474 | 1,150 | 10.3 | 48.5 |
| Adjustment Borrowing | 0 | 0 | 0 | 0 | 0 | | |
| Net Loans/Total Deposits (percent) | 81.8 | 82.6 | 83.0 | .8 | .4 | | |
| All U.S. Banks² | | | | | | | |
| Adjustment Borrowing | 112 | 109 | 57 | -3 | -52 | | |
| Number of Banks Borrowing | 116 | 99 | 72 | -17 | -27 | | |

Source of data: Report of Transactions Accounts, Other Deposits, and Vault Cash (FR2900) and Weekly Report of Loans, Securities, and Assets (FR2644).

1. Banks with total deposits less than \$1 billion as of March 30, 1988.
2. Total deposits as of June 30, 1987. Data taken from Discount Window Borrowing Memoranda prepared weekly by the Discount Policy Group.

these data do not provide much support for the hypothesis that changes in bank liquidity account for the recent shortfall in borrowing.

APPENDIX
 Table A-1
 Estimated Borrowing Function for Adjustment Plus
 Seasonal Borrowing at All Institutions¹

| <u>Independent Variables</u> | (1) | (2) |
|---|------------|------------|
| Constant | 367* (36) | 384* (36) |
| Federal funds rate less discount rate | 409* (40) | 377* (40) |
| Shift dummy variables | | |
| Summer 1984 | -411* (92) | -363* (93) |
| 1986 to present | -261* (35) | -256* (35) |
| October 21, 1987 to present | -122* (43) | -112* (43) |
| Seasonal dummy variables ² | | |
| 1 | | 41 |
| 2 | | -187* |
| 3 | | -32 |
| 4 | | -169* |
| 5 | | -22 |
| 6 | | -67 |
| 7 | | -32 |
| 8 | | 43 |
| 9 | | 100 |
| 10 | | 96 |
| 11 | | 58 |
| 12 | | 80 |
| 13 | | -14 |
| 14 | | 54 |
| 15 | | 99 |
| 16 | | 18 |
| 17 | | -23 |
| 18 | | -12 |
| 19 | | -37 |
| 20 | | -17 |
| 21 | | 15 |
| 22 | | -18 |
| 23 | | 123 |
| 24 | | 10 |
| 25 | | 2 |
| 26 | | -109 |
| Summary Statistics | | |
| Adjusted R ² | .648 | .655 |
| Standard Error of the Estimate | 161 | 159 |
| DW | 1.69 | 1.79 |
| Joint F-test for Seasonal Variables ³ | | .92 |

* Significantly different from zero at the 5 percent level.

1. Estimated by instrumental variables over the maintenance periods between February 15, 1984 and September 7, 1988. Standard errors of the regression coefficients are in parentheses. Excludes special situation borrowing.

2. One seasonal dummy variable per maintenance period, listed chronologically beginning with the first period of the year.

3. Numerator and denominator degrees of freedom are 25 and 90, respectively.

Table A-2
 Estimated Borrowing Function for Adjustment
 Borrowing at Large Institutions¹

| <u>Independent Variables</u> | (1) | (2) |
|---|------------|------------|
| Constant | 141* (29) | 123* (30) |
| Federal funds rate less discount rate | 93 (33) | 111* (33) |
| Shift dummy variables | | |
| Summer 1984 | -200* (76) | -196* (78) |
| 1986 to present | -94* (29) | -85* (29) |
| October 21, 1987 to present | -57 (35) | -71 (36) |
| Seasonal dummy variables ² | | |
| 1 | | 101 |
| 2 | | -100 |
| 3 | | -4 |
| 4 | | -73 |
| 5 | | 3 |
| 6 | | 12 |
| 7 | | -65 |
| 8 | | 56 |
| 9 | | 96 |
| 10 | | -15 |
| 11 | | 1 |
| 12 | | -11 |
| 13 | | 11 |
| 14 | | -49 |
| 15 | | 109 |
| 16 | | -69 |
| 17 | | -44 |
| 18 | | -75 |
| 19 | | -58 |
| 20 | | -62 |
| 21 | | 4 |
| 22 | | 13 |
| 23 | | 116 |
| 24 | | 73 |
| 25 | | 34 |
| 26 | | -3 |
| Summary Statistics | | |
| Adjusted R ² | .196 | .196 |
| Standard Error of the Estimate | 133 | 132 |
| DW | 1.93 | 1.91 |
| Joint F-test for Seasonal Variables ³ | | 1.02 |

* Significantly different from zero at the 5 percent level.

1. Estimated by instrumental variables over the maintenance periods between February 15, 1984 and September 7, 1988. Standard errors of the regression coefficients are in parentheses. Excludes special situation borrowing.

2. One seasonal dummy variable per maintenance period, listed chronologically beginning with the first period of the year.

3. Numerator and denominator degrees of freedom are 25 and 90, respectively.

Table A-3
 Estimated Borrowing Function for Adjustment
 Borrowing at Mid-size Institutions¹

| <u>Independent Variables</u> | (1) | (2) |
|---|-----------|-----------|
| Constant | 58* (9) | 59* (9) |
| Federal funds rate less discount rate | 33* (10) | 32* (10) |
| Shift dummy variables | | |
| Summer 1984 | -37 (23) | -31 (23) |
| 1986 to present | -27* (9) | -29* (9) |
| October 21, 1987 to present | -28* (11) | -27* (11) |
| Seasonal dummy variables ² | | |
| 1 | | 49* |
| 2 | | 17 |
| 3 | | -12 |
| 4 | | -23 |
| 5 | | 8 |
| 6 | | -27 |
| 7 | | 25 |
| 8 | | 7 |
| 9 | | 9 |
| 10 | | 54* |
| 11 | | -3 |
| 12 | | 18 |
| 13 | | -8 |
| 14 | | 2 |
| 15 | | -18 |
| 16 | | 13 |
| 17 | | -5 |
| 18 | | -3 |
| 19 | | -10 |
| 20 | | -12 |
| 21 | | -14 |
| 22 | | -7 |
| 23 | | -9 |
| 24 | | -27 |
| 25 | | 7 |
| 26 | | -31 |
| Summary Statistics | | |
| Adjusted R ² | .251 | .296 |
| Standard Error of the Estimate | 40 | 39 |
| DW | 1.84 | 1.69 |
| Joint F-test for Seasonal Variables ³ | | 1.08 |

* Significantly different from zero at the 5 percent level.

1. Estimated by instrumental variables over the maintenance periods between February 15, 1984 and September 7, 1988. Standard errors of the regression coefficients are in parentheses.

2. One seasonal dummy variable per maintenance period, listed chronologically beginning with the first period of the year.

3. Numerator and denominator degrees of freedom are 25 and 90, respectively.

Table A-4
 Estimated Borrowing Function for Adjustment Plus
 Seasonal Borrowing at Small Institutions¹

| <u>Independent Variables</u> | (1) | (2) |
|---|------------|------------|
| Constant | 168* (20) | 202* (17) |
| Federal funds rate less discount rate | 283* (23) | 234* (18) |
| Shift dummy variables | | |
| Summer 1984 | -174* (52) | -136* (43) |
| 1986 to present | -140* (20) | -141* (16) |
| October 21, 1987 to present | -37 (24) | -14 (20) |
| Seasonal dummy variables ² | | |
| 1 | | -108* |
| 2 | | -104* |
| 3 | | -16 |
| 4 | | -73* |
| 5 | | -33 |
| 6 | | -52 |
| 7 | | 8 |
| 8 | | -20 |
| 9 | | 5 |
| 10 | | 57* |
| 11 | | 60 |
| 12 | | 73* |
| 13 | | -16 |
| 14 | | -101* |
| 15 | | 8 |
| 16 | | 74* |
| 17 | | 26 |
| 18 | | 66* |
| 19 | | 30 |
| 20 | | 57 |
| 21 | | 25 |
| 22 | | -23 |
| 23 | | 16 |
| 24 | | -36 |
| 25 | | -40 |
| 26 | | -74* |
| Summary Statistics | | |
| Adjusted R ² | .712 | .801 |
| Standard Error of the Estimate | 91 | 74 |
| DW | 1.08 | 1.12 |
| Joint F-test for Seasonal Variables ³ | | 3.41* |

* Significantly different from zero at the 5 percent level.

1. Estimated by instrumental variables over the maintenance periods between February 15, 1984 and September 7, 1988. Standard errors of the regression coefficients are in parentheses.

2. One seasonal dummy variable per maintenance period, listed chronologically beginning with the first period of the year.

3. Numerator and denominator degrees of freedom are 25 and 90, respectively.

Table A-5
 Estimated Borrowing Function for Adjustment
 Borrowing at Small Institutions¹

| <u>Independent Variables</u> | (1) | (2) |
|---|-----------|-----------|
| Constant | 112* (15) | 98* (14) |
| Federal funds rate less discount rate | 132* (16) | 146* (16) |
| Shift dummy variables | | |
| Summer 1984 | -76* (38) | -62 (37) |
| 1986 to present | -98* (14) | -96* (14) |
| October 21, 1987 to present | -64* (18) | -68* (17) |
| Seasonal dummy variables ² | | |
| 1 | | 7 |
| 2 | | 2 |
| 3 | | 63 |
| 4 | | 11 |
| 5 | | 26 |
| 6 | | 7 |
| 7 | | 52 |
| 8 | | 25 |
| 9 | | 23 |
| 10 | | 70* |
| 11 | | 41 |
| 12 | | 40 |
| 13 | | -58* |
| 14 | | 33 |
| 15 | | -48 |
| 16 | | -16 |
| 17 | | -70* |
| 18 | | -42 |
| 19 | | -55 |
| 20 | | -16 |
| 21 | | -22 |
| 22 | | -43 |
| 23 | | -1 |
| 24 | | -15 |
| 25 | | -1 |
| 26 | | -12 |
| Summary Statistics | | |
| Adjusted R ² | .609 | .650 |
| Standard Error of the Estimate | 66 | 63 |
| DW | 1.00 | .86 |
| Joint F-test for Seasonal Variables ³ | | 1.22 |

* Significantly different from zero at the 5 percent level.

1. Estimated by instrumental variables over the maintenance periods between February 15, 1984 and September 7, 1988. Standard errors of the regression coefficients are in parentheses.

2. One seasonal dummy variable per maintenance period, listed chronologically beginning with the first period of the year.

3. Numerator and denominator degrees of freedom are 25 and 90, respectively.

Table A-6
 Estimated Borrowing Function for
 Seasonal Borrowing at Small Institutions¹

| <u>Independent Variables</u> | (1) | (2) |
|---|-----------|-----------|
| Constant | 56* (17) | 104* (10) |
| Federal funds rate less discount rate | 151* (19) | 88* (11) |
| Shift dummy variables | | |
| Summer 1984 | -98* (45) | -74* (26) |
| 1986 to present | -42* (17) | -45* (10) |
| October 21, 1987 to present | 26* (21) | 55* (12) |
| Seasonal dummy variables ² | | |
| 1 | | -116* |
| 2 | | -106* |
| 3 | | -80* |
| 4 | | -84* |
| 5 | | -59* |
| 6 | | -59* |
| 7 | | -44* |
| 8 | | -45* |
| 9 | | -28 |
| 10 | | -13 |
| 11 | | 19 |
| 12 | | 33 |
| 13 | | 42* |
| 14 | | 68* |
| 15 | | 57* |
| 16 | | 90* |
| 17 | | 96* |
| 18 | | -107* |
| 19 | | 85* |
| 20 | | 73* |
| 21 | | 47* |
| 22 | | 19 |
| 23 | | 18 |
| 24 | | -22 |
| 25 | | -38 |
| 26 | | -62* |
| Summary Statistics | | |
| Adjusted R ² | .429 | .800 |
| Standard Error of the Estimate | 78 | 44 |
| DW | .36 | .46 |
| Joint F-test for Seasonal Variables ³ | | 9.04* |

* Significantly different from zero at the 5 percent level.

1. Estimated by instrumental variables over the maintenance periods between February 15, 1984 and September 7, 1988. Standard errors of the regression coefficients are in parentheses.

2. One seasonal dummy variable per maintenance period, listed chronologically beginning with the first period of the year.

3. Numerator and denominator degrees of freedom are 25 and 90, respectively.

STRICTLY CONFIDENTIAL (FR)
CLASS II - FOMC

BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM

Office Correspondence

Date December 9, 1988

To Mr. Kohn

Subject: Results of Conference Call of

From Gary Gillum

Discount Officers

A conference call of discount officers was held on November 17 to seek possible explanations for the abrupt decline in adjustment plus seasonal borrowing over the previous three reserve maintenance periods. The decline had occurred despite a tendency for the federal funds rate to trade on the firm side of the 8 to 8-1/4 percent range that had prevailed since the discount rate increase in early August.

The general view was that seasonal borrowing has been quite strong in 1988--running far above last year's levels--and that the dropoff since the August-September peak period has been about what would be expected. A few districts suggested that the drought might be boosting seasonal lending a little bit recently.

With regard to adjustment credit activity, the assessments of discount officers were mixed. Some saw a dropoff in lending in recent maintenance periods while others found little or no evidence of a reduction, and a few even noted some pickup in lending on a year-over-year basis. There was general agreement that no significant change in administration of the window had taken place that might have caused a reduction in borrowing. Some districts did indicate that they have been a little more diligent in inquiring as to the reasons for borrowing but felt that these inquiries should not be affecting borrowing behavior. In other districts, individual institutions have been counseled recently regarding appropriate use of the window, but the nature and frequency of such

counseling has been within historical norms. One Reserve Bank indicated that stepped-up training of branch personnel as to their lending responsibilities may have led in 1988 to some reduction in borrowing at the branches.

In offering possible explanations for a lessened tendency over time for banks to borrow adjustment credit, discount officers most often pointed to the counseling efforts undertaken by Reserve Banks regarding excessive daylight and overnight overdrafts and to technological advances permitting better monitoring by banks of the status of their accounts at Reserve Banks. Discount officers contended that overdraft counseling has tended to cause banks of all sizes to manage their account positions more closely over the course of each day, thereby lowering the frequency and magnitude of daylight overdrafts. Closer account management during the day tends to lessen the likelihood of a large overdraft position late in the day when, if market funds happen to be scarce, a bank's options would be limited to obtaining sufficient funds from the discount window to prevent an overnight overdraft or incurring the penalty that would be associated with an overnight overdraft. The ability of banks to monitor their account positions during the day has been enhanced by the increasing use over the last few years of remote terminals providing them with electronic access to relatively recent information on account activity that is maintained in Reserve Bank computers.¹

1. The information provided to depository institutions varies considerably across districts. In some districts, account information is available on a relatively current basis for the institution's opening balance updated for funds transfers, securities transfers, and off-line payments activity while other districts do not provide fully consolidated payments activity, or provide updates for payments activity relatively infrequently during the day.

If overdraft counseling of smaller depository institutions and electronic access to account information have led to a sizable reduction in the need of these institutions for adjustment credit over time, and in recent reserve maintenance periods in particular, then measures of overdraft incidence among smaller institutions presumably should exhibit declines over relevant time spans. Federal Reserve data on overdraft experience during the period from the beginning of 1987 through early November 1988 do provide some limited support for the notion that overdraft counseling and electronic access to account information have been exerting some longer-term influence damping usage of adjustment credit by smaller institutions but strongly suggest that these factors have not led to reduced adjustment borrowing in recent maintenance periods. Among institutions with less than \$250 million in assets, the volume of daylight funds overdrafts has fallen well below levels of early 1987 but has fluctuated within a narrow range since mid-1988. The number of institutions experiencing overdrafts has not declined on balance either over the whole 1987-88 period or over recent maintenance periods. Among institutions with assets between \$250 million and \$1 billion, both the aggregate volume of overdrafts and the number of institutions in overdraft have not changed significantly on balance since mid-1988 and remain near early 1987 levels.

Several discount officers contended that their banks currently have relatively little need for the window. Midwestern districts noted that agricultural banks continue to have ample liquidity, while two other districts stated that their banks are not seeing much loan growth. The memorandum prepared by Joshua Feinman and John Rea suggests that the

available evidence does not support the notion that changes in bank liquidity can account for the recent shortfall in adjustment borrowing.² New York suggested that heavy potential loan demand associated with recent leveraged buyout activity might be causing larger banks with outstanding commitments to lend in connection with these buyouts to refrain from using the window. Some New York banks have expressed concern that a number of LBO deals will be rushed to consummation just prior to yearend, a time when unusual pressures often are evident in money markets and could greatly limit banks' ability to obtain market funds. Although this may be a factor affecting borrowing attitudes of New York banks, other discount officers have not picked up similar sentiments among their large banks.

A variety of other possible causes of reduced lending activity were suggested by discount officers, but none of these garnered wide support and, indeed, none seem very likely candidates to explain the extent of the recent drop. Several districts, most notably Dallas, suggested that continuing adverse publicity regarding bank and thrift failures around the country and the weakened condition of FSLIC may be having a further chilling effect on willingness to come to the window. It also was suggested that larger banks may be refraining from borrowing so that there would be no question as to the availability of discount-window credit in the event of an operating problem like the one experienced by Bank of New York in late 1985 or, on a smaller scale, by other banks since

2. Joshua Feinman and John Rea, "The Recent Discount Window Borrowing Shortfall," memorandum to Mr. Kohn dated December 9, 1988.

then.³ In one district, the expedited funds availability policy apparently has produced concern at some mid-sized banks; these banks indicate that the possibility of unexpected check returns complicates management of their reserve positions. Two districts speculated that bank mergers were reducing the need for discount window credit. As banks are swallowed up, there are fewer to borrow; and those banks absorbed as independent units into an existing holding company often tend to get needed funds from the holding company rather than turning to the window. One discount officer noted that the number of Fedwire problems has been on the decline.⁴ Fedwire difficulties can boost use of the window as some banks fail to receive expected wires in timely fashion and elect to borrow rather than take the chance that the wires might not be received before Fedwire closes for the day.

3. In recent weeks, two large banks have experienced major computer operating problems. In the first instance, the bank with the operating problem found itself with a substantial volume of excess reserves and did not have to turn to the window, but four other large banks did borrow when funds expected from the affected bank were not received. In the second case, a money-center bank in New York experienced a similar inability to make payments electronically and ended the day by borrowing from the window to avoid a very substantial overnight overdraft. This bank became the first to be charged the flexible rate on such a loan.

4. On Monday, the Philadelphia Reserve Bank experienced a major Fedwire problem. Four large banks in other reserve districts were forced to turn to the window when funds expected from banks in the Philadelphia district were not received.