Excess Reserves and Reserve Targeting

In 1980 banks held on average about $275 million more reserves than required by law. Although this is a relatively small amount when measured against $42 billion of required reserves and $1,500 billion of total bank assets, the significance of excess reserves for monetary policy and money market conditions far outweighs their relative magnitude. Excess reserves arise out of the process, on the one hand, of some 15,000 banks trying to meet their weekly reserve requirements and, on the other hand, of the Federal Reserve attempting to hit its nonborrowed reserve targets. As a proportion of required reserves, excess reserves are remarkably small, especially in light of the large number of institutions simultaneously adjusting their reserve positions, the huge volume of funds shifting around the banking system, and the considerable uncertainty over float and other special factors affecting reserve availability. However, since only a limited amount of excess reserves can be carried forward, small surpluses or shortages of reserves can have disproportionate effects on the Federal funds and other short-term interest rates. Moreover, the erratic and unpredictable fluctuations in excess reserves can complicate the task of setting and achieving weekly reserve objectives. At times, the week-to-week changes in excess reserves are sizable. During the last week in March 1981, for example, banks held $462 million of excess reserves, whereas in the previous week they had realized a small deficiency.

The purpose of this article is to discuss the major factors affecting the weekly movements of excess reserves. It examines the roles of carry-over privileges, "as-of" reserve adjustments, and seasonal factors in causing these week-to-week fluctuations, and it analyzes the implications these variations have for the day-to-day management of monetary policy and the market's interpretation of Federal Reserve action. From a longer term perspective, it examines how banks' holdings of excess reserves have been influenced by the general rise in interest rates, the expansion of the Federal funds market, and the implementation of regulatory and policy changes by the Federal Reserve over the past fifteen years.

Excess reserves and interest rates

Excess reserves have much more important implications for money market conditions under the reserve strategy that the Federal Reserve adopted on October 6, 1979 than they did prior to that period Under the new procedures, the Federal Reserve concentrates on supplying reserves, rather than on setting the Federal funds rate, to achieve its monetary goals. Consequently, factors—such as excess reserves—that in the past had the potential for influencing short-term interest rates, but were offset by the Domestic Open Market Trading Desk, could well cause large rate movements under the new approach to policy implementation and could lead to more variability in the public's demand for money.

At times the banking system may end up with a large amount of unwanted excess reserves, and banks holding these large excesses will try to sell them in the Federal funds market. Since reserves earn no interest, banks may be willing to accept very low interest rates to unload unusable excesses. Thus, relatively small surpluses can cause short-term rates to fall sharply.

At other times, a relative shortage of excess reserves may develop. For example, excess reserves

may end up at small banks, some of which do not make an effort to sell them. Although the banking system as a whole may be in good balance, some banks may not be able to buy enough funds in the Federal funds market to meet reserve requirements, even though they bid up the rate. Eventually they may have to turn to the discount window, but in the process they may push up the Federal funds rate significantly. Consequently, under current operating procedures, relatively small changes in reserve positions can produce sharp changes in money market conditions and may contribute to the variability of the money stock.

Excess reserves and reserve targeting

Although the Desk has no direct control over excess reserves, the volume of excess reserves expected for the week plays a significant role in determining the Desk's weekly open market operations. Under the current operating procedures, the Board of Governors staff and the manager of the Desk construct weekly reserve paths that are consistent with the money growth objectives established by the Federal Open Market Committee (FOMC). In constructing and revising the weekly reserve paths, the Board staff calculates required reserves that are consistent with the money growth objectives and adds on an estimate of excess reserves to obtain the total reserve path. The staff then derives a nonborrowed reserve objective by subtracting a borrowing level indicated by the FOMC. The amount of borrowing is often relatively close to the volume prevailing before the FOMC meeting, but the FOMC on occasion may also increase or reduce the level to step up or ease adjustment pressures on the banks.[1]

At times the excess reserve estimate may prove incorrect, in which case the need for discount window borrowing will be different than expected. For example, if the demand for excess reserves is underestimated, the nonborrowed reserves supplied by the Desk will generate a greater than expected need for borrowing at the discount window. This higher than expected borrowing may be reflected in a higher Federal funds rate. Conversely, an overestimate of the demand for excess reserves may produce a fall in the Federal funds rate. Although these rate movements are transitory and technical in nature, they may be misinterpreted by market participants to indicate a greater or less willingness on the part of the Federal Reserve to supply reserves

In addition to constructing the weekly reserve paths, the Desk uses daily projections of the major market factors affecting the supply of reserves—such as float, Treasury balances, and currency in circulation. These are factors over which the Desk has no direct control. At times, these factors may differ significantly from the projected levels, in which case the supply of nonborrowed reserves available to the banking system would be temporarily different from the expected levels. If this occurs on a Wednesday, it may cause excess reserves or borrowing to be substantially different from assumed levels. At other times, borrowing from the discount window may be higher than the level assumed in constructing the path. As a result, excess reserves would be higher than estimated and money market conditions would normally be easier than expected.

Excess reserves in perspective

Before getting into a detailed discussion of weekly fluctuations in excess reserves, it is useful to put the current behavior of excess reserves into historical perspective. A variety of market, technological, and regulatory developments over the past twenty years helped banks lower their need for excess reserves. Even though the size of the banking system expanded dramatically during the last two decades, excess reserves declined significantly both in absolute terms and as a percentage of required reserves (Chart 1). In the early 1960s, excess reserves held by member banks were as high as $600 million, equivalent to over 3 percent of their reserve requirements, but then they declined to a $350-400 million level in the mid-1960s and fell sharply again in the late 1960s. Thereafter, excess reserves fluctuated mostly around the $200 million level, even as the banking system continued to expand rapidly.

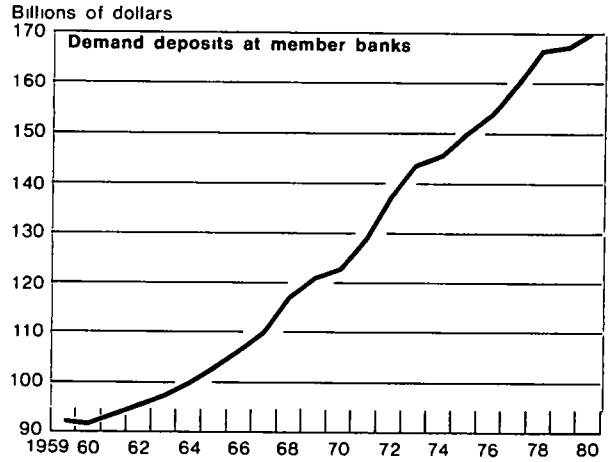
A variety of technological and structural changes over the last two decades helped the banking system reduce its need for excess reserves. Major advances were made in the data-processing and telecommunications systems, which made it easier for banks to track their reserve positions and transfer funds to other institutions. These developments also allowed many smaller banks to participate actively in the Federal funds market, either directly or indirectly through correspondents. Moreover, with the acceleration of inflation and the accompanying rise in interest rates, the opportunity cost of holding idle balances increased rapidly, encouraging banks to implement better reserve management techniques.

Regulatory changes in the late 1960s also helped reduce the need for excess reserves. In September 1968 the Federal Reserve allowed banks greater flexibility in calculating and fulfilling their reserve require-

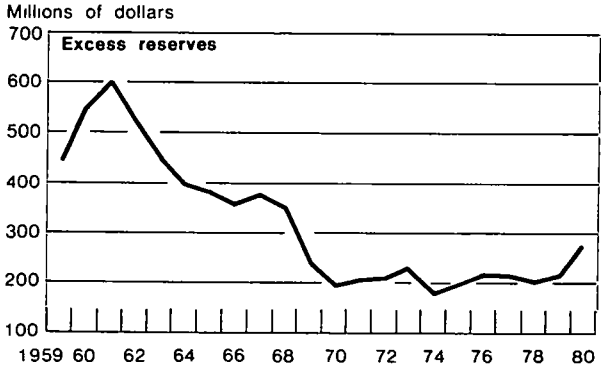
[1] For further details on this procedure, see "Monetary Policy and Open Market Operations in 1980", this *Quarterly Review* (Summer 1981), pages 61-67

Chart 1

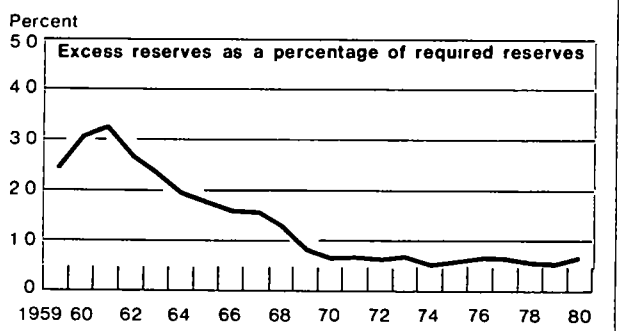
While the banking system grew substantially during the last twenty years . . .



. . . excess reserves declined sharply in the 1960s and then leveled out in the 1970s, both in dollar terms . . .



. . . and as a percentage of required reserves.



Source Board of Governors of the Federal Reserve System

ments by switching from contemporaneous to lagged reserve accounting and by liberalizing the reserve carry-over privilege. After 1968, banks were required to base their calculations of required reserves on their reservable liabilities held two weeks earlier Vault cash was also lagged two weeks, that is, reserve requirements in the current maintenance period could be satisfied by vault cash held two weeks earlier. At the same time, banks were allowed to carry forward one week a part or all of their current period's reserve surplus or deficit However, the portion carried forward could not exceed 2 percent of their required reserves, and banks could not run deficits two weeks in a row without incurring a penalty [2] Also, any surplus not used in the subsequent week was lost

These changes made it easier for banks to manage their reserve positions and to reduce their excess reserves. From the viewpoint of a bank's money desk manager, the new rules provided clear advantages. Liberalization of the carry-over privilege allowed banks to make good use of excesses in the previous week. Moreover, with lagged reserve accounting, banks knew well in advance what their reserve requirements would be The lagging of vault cash also eliminated last-minute changes in maintained reserves as a result of unexpected inflows or outflows of cash While other factors were also at work to reduce excess reserves, the September 1968 regulatory changes accounted for a major portion of the decline, according to our statistical analysis.[3] Unfortunately, it was not possible to isolate the impact of the change in accounting rules from the effect of the liberalization of the carry-over privilege, since both occurred simultaneously

Recent movements in excess reserves

After fluctuating mostly around the $200 million level in the 1970s, it appeared that excess reserves might settle more or less permanently at this level But excess reserves then increased by about $33 mil-

[2] Before September 1968, member banks could make up reserve deficiencies in the following period of up to 2 percent of required reserves, but there was no carry-over privilege for surplus reserves Also, before 1968, the reserve maintenance period was synchronous with the computation period But in effect there was a one-day lag, because daily reserves were measured at the close of business while daily deposits were measured at the opening of business There was, in effect, a one-day lagged accounting of vault cash as well The maintenance period also varied by size of bank—one week for reserve city banks and two weeks for country banks

[3] Regression analysis was used to estimate the impact of the 1968 regulatory changes According to the results, excess reserves fell about $120 million after September 1968 Other explanatory variables used in the equation included dummy variables representing the October 1979 change in operating procedures, the November 1980 implementation of the Monetary Control Act, and a time trend reflecting technological and market developments Monthly data for the 1959-80 period were employed

lion, according to our estimates, after the Federal Reserve switched operating procedures in October 1979 (box). Under the new strategy, banks could no longer count on the Federal Reserve to supply reserves necessary to maintain a given funds rate, and this in turn appears to have prompted some banks at least to be more cautious in the way they manage their reserve positions by holding more excess reserves on average.

Excess reserves also increased dramatically following the implementation of the Monetary Control Act in November 1980. Immediately after implementation, excess reserves averaged $600 million, substantially above the $250 million level prevailing in early 1980. But in subsequent months excess reserves returned to more normal levels. Since the number of institutions required to maintain reserves was greatly expanded by the new law, it appears that the large jump in excess reserves reported in late 1980 and early 1981 might have resulted from unfamiliarity with the new reporting requirements, especially among the smaller institutions.[4]

Weekly fluctuations of excess reserves

While the average level of excess reserves declined substantially over the last twenty years, the weekly variability remained high. In 1980, for example, the average level of excess reserves for all banks was only $275 million, but the average week-to-week variation was more than $260 million. A large portion of these weekly variations is attributable to certain technical factors, particularly seasonal patterns, carry-over privileges, and as-of adjustments. In addition, other short-term demand and supply factors may also contribute at times to the variability of weekly excess reserve numbers.

"Seasonal" factors

Excess reserves do not exhibit sustained swings in levels for several weeks or months at a time. Rather, the "seasonal" pattern (or, perhaps more accurately, the calendar pattern) generally consists of one-week increases in excess reserves, reflecting mostly quarterly statement dates, month-end dates, social security payment dates, and bank holidays. These one-week spurts are relevant only when analyzing weekly figures, as they are normally washed out in the monthly data. Total and required reserves, on the other hand, do exhibit more sustained swings, reflecting patterns in deposits and other reservable liabilities.

Statistical analysis of weekly data during the past several years indicates that, as a rule of thumb, banks step up their excess reserve balances by about $85 million, on average, during weeks containing the last day of the month and an extra $90 million during weeks containing the end of the quarter. In addition, banks hold approximately $42 million more excess reserves during weeks that social security benefit checks are mailed and $133 million more during weeks containing a nationwide bank holiday (box). The impact of individual dates is varied, however. The increases associated with the end of the second and fourth quarters are usually larger than those for the first and third quarters, for example. This is partly because the Fourth of July and the Christmas-New Year holidays frequently fall during the same weeks as the ends of the second and fourth quarters, respectively.

The main reasons for these calendar increases in excess reserves appear to be the larger volume and greater variability of funds flowing into and out of the banking system during these weeks than at other times This would be especially true during weeks when social security checks are mailed to beneficiaries and at the month end and quarter end, when there are frequently large flows into and out of business checking accounts. Banks also reportedly find it more difficult to predict inflows and outflows of funds during weeks containing a holiday. Banks vary somewhat in their reaction to these calendar factors. For example, unlike the other banks, the New York banks show no statistically significant increase in average holdings of excess reserves at the quarter end. However, like the other banks, the large New York banks show a similar jump in excess reserves during weeks containing a holiday or social security payment date.

Reserve carry-over

While calendar factors induce banks to hold more excess reserves during certain weeks of the year, reserve carry-overs encourage banks to adjust their surplus reserves with a view toward their previous and succeeding weeks' reserve positions The carry-over provision gives banks some leeway in meeting their reserve requirements by allowing the banks to carry forward their reserve surpluses or deficiencies up to a maximum of 2 percent of their required reserves.

An examination of recent data indicates that banks make wide and frequent use of the carry-over privilege. In 1980, banks carried forward, on average, about $230 million of gross excesses from the previous week and $130 million of gross deficiencies. In

[4] Statistical analysis on a disaggregated basis indicates that most of this large increase occurred at banks outside New York City

Factors Affecting Weekly Variations of Excess Reserves: A Statistical Analysis

Regression analysis was used to estimate the impact of certain technical factors on week-to-week fluctuations of excess reserves. Reserve carry-overs, quarterly statement dates, month-end dates, social security payment dates, and bank holidays accounted for a large portion of the weekly changes. In addition, the October 1979 change in Federal Reserve operating procedures toward placing more emphasis on the supply of bank reserves caused excess reserves to increase somewhat. Moreover, immediately following the November 1980 implementation of the Monetary Control Act, banks sharply increased their holdings of excess reserves, but in subsequent weeks they gradually trimmed back on their excess balances as they became more familiar with the new requirements. Demand factors such as interest rates and activity levels appeared to have little predictive value on a week-to-week basis.

The regression results were as follows:

Excess reserves = 206.9 − 0.55 carry-over + 89.7 quarter end + 84.8 month end
(22.8) (−8.0) (4.4) (5.4)
+ 41.6 social security + 132 6 holiday
(2.9) (10.0)
+ 33.1 October 1979 + 223 2 November 1980 − 11.4 post-November 1980
(2.6) (6.6) (−6.7)

Sample period: July 1, 1970 to July 1, 1981 (weekly).

Summary statistics: DW = 1.97; $\bar{R}^2 = 0.44$; SEE = 116.3; Figures in parentheses are t-values.

Variables:

Excess reserves	Excess reserves in millions of dollars
Carry-over	Net reserve carry-over in millions of dollars
Quarter end	Dummy variable with 1's for weeks containing the last day of the quarter and 0's elsewhere.
Month end	Dummy variable with 1's for weeks containing the last day of the month and 0's elsewhere
Social security	Dummy variable with 1's for weeks containing the social security benefit payment dates (generally the third day of the month) and 0's elsewhere
Holiday	Dummy variable with 1's for weeks containing bank holidays and 0's elsewhere
October 1979	Dummy variable to represent Federal Reserve procedural change from targeting the Federal funds rate to targeting bank reserves, with 1's for weeks after October 6, 1979 and 0's elsewhere.
November 1980	Dummy variable to represent implementation of the Monetary Control Act, with 1's for weeks ended after November 12, 1980 and 0's elsewhere.
Post-November 1980	Trend variable for the November 20-July 1 subperiod, to represent banks' gradual adjustment to the new requirements of the Monetary Control Act.

1980, net carry-over frequently approached the $200 million level. Large banks, in particular, made extensive use of the carry-over privilege to manage their reserve positions over several weeks rather than in a single week.

The carry-over privilege contributes to the variability of excess reserves by encouraging banks to "overadjust" their current reserve positions in order to take full advantage of reserves carried over from the previous period. As can be seen in Chart 2, both reserve carry-over and excess reserves exhibit strong sawtooth patterns, that is, they move in fairly regular up-down patterns around their average levels. The sawtooth patterns of excess and carry-over reserves are directly related to each other. A large excess in the current week normally results in a large positive carry-over and a small surplus (or even a deficit occasionally) in the following period. This, in turn, induces the opposite reaction in the succeeding week. Moreover, since banks lose the advantage of any carry-over not utilized in the succeeding period, they are likely to overadjust their current positions to ensure against any such loss, accentuating the oscillations.[5] Our re-

[5] For example, if a bank's surplus carry-over into the current week is $5 million, it is likely to aim for a deficit in the current period of at least $5 million, so as not to lose any benefit of the carry-over Any uncovered deficiency in the current period would, in turn, be carried over to the succeeding week

gression results in the box indicate that, for the banking system as a whole, excess reserves move in the opposite direction from carry-over by a multiple of 0.55. In other words, if reserves carried over into the current period increased by $100 million, excess reserves would normally be $55 million lower than otherwise, and *vice versa*.

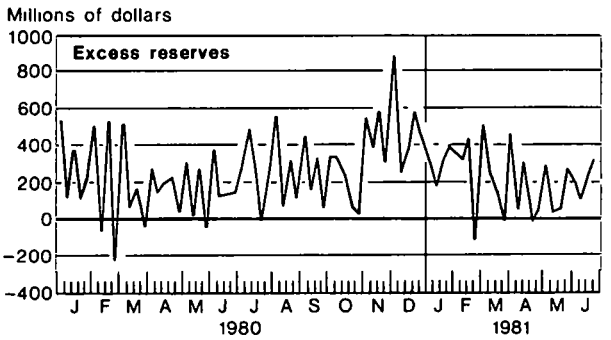
In most weeks, excess reserves fluctuate between zero and $400 million but, on occasion, the variations are substantially larger. The size of the oscillations depends partly on whether the major banks collectively are in deficit or in surplus. If they are all in similar positions, the oscillations can be as large as $800 million from a peak to a trough. If, on the other hand, major banks are on opposite sides of the fence, the fluctuations for the banking system as a whole can be much smaller.

The oscillations may be initiated by a number of different factors. They may begin with a sharp unexpected jump in bank borrowing, which increases total reserves in relation to required reserves. At the time they borrow, banks often do not perceive that reserves will be plentiful for the week on average. At other times, banks may position themselves to take advantage of reserve carry-over or expected rate movements by holding larger than average excesses in the current week. On other occasions, operational difficulties or large last-minute inflows may cause banks to wind up with more reserves than desired.

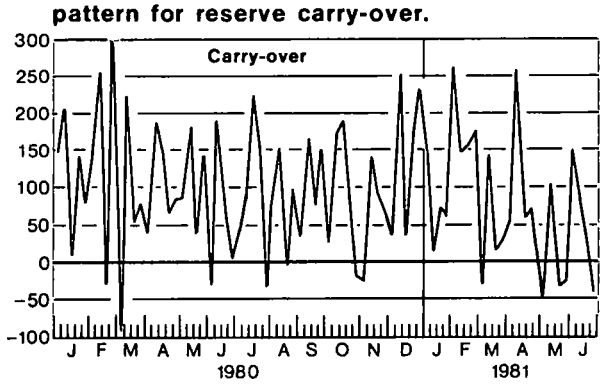
The carry-over privilege, while causing excess reserves to oscillate, does not significantly affect the implementation of monetary policy. Since the amount carried over into the current period is known at the beginning of the week, it can be offset by the Desk. (There may be some uncertainty, however, as to how much of the carry-over will actually be utilized by the banks.) Moreover, reserve carry-over serves a useful purpose by acting as a moderating influence on the money market. Without carry-over, a shock to reserves would have to be absorbed in the current week, either by banks holding larger than desired excesses or by banks borrowing more than expected from the discount window. As a consequence, it is likely that without carry-over the Federal funds rate (and bank borrowing from the discount window) would fluctuate more from week to week than they do currently.

Chart 2

Banks are allowed to carry forward one week reserve excesses or deficits up to 2 percent of their required reserves. Since they lose the advantage of any carry-over not utilized in the succeeding period, they are likely to "overadjust" their weekly reserve positions to assure against such loss. As a result, weekly excess reserves exhibit a strong sawtooth pattern . . .



. . . which is reflected in a similar pattern for reserve carry-over.



Source: Board of Governors of the Federal Reserve System

"As-of" adjustments

At times, errors or disruptions occur in the process of transferring funds or securities to or from the Federal Reserve. Frequently, they will result from transpositional mistakes or breakdowns in the telecommunications or data-processing systems. They include entries posted to the wrong reserve accounts, delays in posting entries, and erroneous instructions by depository institutions. To rectify these errors, bookkeeping corrections called as-of adjustments are made to the affected banks' reserve positions at the various Federal Reserve Banks. If the error is discovered in the week in which it occurs, the current week's reserve position can generally be corrected. However, if the error is discovered in a subsequent period, a problem arises as to whether to make the adjustment to the current or a previous week's reserve position.

There are three types of as-of adjustments: ASOAs,

ASOBs, and ASOCs. ASOAs are corrections made to banks' reserve positions in the current or subsequent week, while ASOBs are adjustments made to banks' positions in the previous week, and ASOCs are corrections made to banks' reserve positions in statement periods prior to the previous week. For example, suppose that July 16-22 is the current reserve maintenance week; then, ASOAs would be made to the July 16-22 or July 23-29 week, ASOBs to the July 9-15 week, and ASOCs to the July 2-8 and other prior weeks.

The as-of adjustments are applied to previous, current, or subsequent weeks according to guidelines laid down by the Reserve Banks. According to the New York Federal Reserve Bank's rules, for example,[6] positive as-of adjustments issued during the current period but involving the two prior reserve periods are normally applied first to reduce penalty deficiencies (that is, deficiencies that exceed the allowable 2 percent carry-over limit and are subject to a penalty rate) in the two prior weeks (as ASOBs and ASOCs); any unused portions of the reserve adjustments are then applied to the current or subsequent period (as ASOAs). Similarly, negative as-of adjustments involving the two prior periods generally are first applied as ASOBs and ASOCs to reduce unusable surpluses (that is, excesses that exceed the maximum 2 percent carry-over limit) in the two previous periods, and the remaining portions are applied as ASOAs to the current or subsequent period. As-of adjustments issued in and involving the current period are applied as ASOAs in either the current or following period.[7]

As a consequence, banks seldom lose and frequently gain from as-of adjustments. ASOBs and ASOCs will almost always improve but will seldom worsen a bank's past reserve position, while ASOAs can usually be offset by buying or selling funds in the Federal funds market. Because banks acquire unusable excesses more often than they incur penalty deficiencies, excess reserve data are almost always revised downward. In 1980, excess reserves were revised downward as a result of as-of adjustments by an average weekly amount of nearly $60 million, equivalent to about 20 percent of total excess reserves. In many weeks the revisions resulting from as-of adjustments were substantially larger than these averages; frequently, they were $100 million and sometimes they were over $400 million.[8]

For the most part, this flexible policy regarding the application of as-of adjustments is equitable, for without such latitude a bank might be unfairly penalized if it were required to apply the full as-of adjustment to the week in which it occurred, especially if the bank had offset the mistake by maintaining more or less reserves than it would have otherwise. On the other hand, this policy reduces the effective costs of maintaining too little or too much reserves for many banks. The reason is that there is a fairly good chance for these banks to benefit from an as-of adjustment which will either reduce a past deficiency that was subject to a penalty rate or allow use of a past surplus that was ineligible for carry-over.

Economic and other factors

Economic as well as technical factors will affect banks' management of excess reserves. On the demand side, the level of interest rates determines the opportunity cost of holding unnecessary balances. As rates rise, banks will be induced to conserve on idle funds, although such adjustment may take place over a period of time rather than immediately. Banks may also increase their holdings of excess reserves during times of uncertainty and instability in the money markets Moreover, since banks can carry forward a portion of their reserve excess or deficit, they are likely to adjust their current holdings of excess reserves in line with their view of future interest rate

[6] Although the requirements vary somewhat among the District Banks to reflect different needs and conditions, the New York Federal Reserve Bank's guidelines summarized here are fairly similar to those of the other Reserve Banks A more detailed description of this Bank's guidelines is available from the Federal Reserve Bank of New York

[7] Under the New York Federal Reserve Bank's guidelines, ASOAs are routinely applied to the current period if they are received by the Accounting Department by Tuesday, otherwise, they are applied to the following reserve period unless requested otherwise by the depository institution

[8] As-of adjustments arising from accounting or administrative errors or delays in processing transactions by Federal Reserve offices are based on the principle that banks should neither gain nor lose as a result of such errors In practice, however, it is easier to demonstrate when a bank has lost than when it has benefited from an error or delay affecting a prior period Consequently, in such circumstances, the Federal Reserve Banks usually give banks the benefit of the doubt by applying as-of adjustments in the manner described

The Federal Reserve Banks also consider requests from banks for reserve adjustments for errors made by the banks themselves These errors may be similar to those made by the Federal Reserve, for example, a bank may transfer funds to the wrong bank However, before acting on such a request, the Federal Reserve Bank will first satisfy itself that the institutions involved are not attempting to manage their reserve positions after the fact and it will normally apply both sides of the adjustment simultaneously (a credit for the one institution and a debit for the other). The Federal Reserve Banks make these adjustments out of a sense of equity and as a service to the institutions since the Reserve Banks, as banks of account, are usually in the best position to correct the reserve impact of such errors A Federal Reserve Bank may decline requests where corrections are equally feasible on the part of the banks, and it may also discourage repeated requests in the interest of encouraging an institution to correct shortcomings in its own internal procedures

movements. If they expect rates to go down, they will likely run deficits in the current period and make up the deficiencies at a later time when rates are expected to be lower.

At times, banks may miscalculate aggregate reserve availability and money market conditions and position themselves incorrectly for the settlement day by borrowing more than needed early in the week; then, if the Desk provides reserves in accordance with its nonborrowed reserve objective, too many reserves will result. Part of the adjustment will then normally occur in lower borrowings later in the week and the remainder in larger holdings of excess reserves.[9] Typically, such an "oversupply" of reserves shows up late on Wednesday with a substantial easing of the Federal funds rate. Analysis of weekly data over the last several years indicates that a 1 percentage point drop in the late Wednesday Federal funds rate below the weekly effective rate is associated with a $15 million increase in the week's excess reserves over the prevailing average level.

Finally, operational difficulties may prevent banks at times from achieving the minimal level of excess reserves desired. Common problems include breakdowns of data-processing and communications systems or unexpected inflows and late payments by correspondent banks on settlement day.

Policy implications

This analysis raises some issues regarding current practices, procedures, and regulations affecting excess reserves. The use of as-of adjustments is especially relevant, for, although as-of adjustments are relatively small compared with total reserves, they are sizable when compared with excess reserves. Critics argue that the Federal Reserve Banks' policies or applying reserve adjustments to previous weeks only to the extent that they reduce past penalties or unusable surpluses substantially reduce the risks and costs to banks for not tightly managing their reserve positions and weaken the Desk's control over reserves by allowing banks to adjust their reserve positions after the fact. The Federal Reserve could close this gap in the Desk's control by requiring that all as-of adjustments be applied to the current or future period regardless of when they occurred. However, such a policy change would raise questions of equity, especially if the banks are penalized for errors for which they are not responsible.

[9] At times, though, the Desk will take into account this "overborrowing" and permit nonborrowed reserves to fall short of the path.

Summary

Banks substantially reduced their holdings of excess reserves between the early 1960s and late 1970s but then increased them on two major occasions during the last two years. Structural and technological innovations in the money market, regulatory and procedural changes by the Federal Reserve, and a general rise in interest rates contributed to these long-run changes. While the average level of excess reserves is fairly low, the current holdings of excess reserves fluctuate sharply on a week-to-week basis. To a large extent, these weekly variations can be explained by such factors as carry-over privileges, as-of adjustments, and calendar patterns. But a part of these weekly fluctuations is erratic and unpredictable and complicates the task of setting and achieving weekly reserve objectives. In the face of the weekly variations in excess reserves, reserve carry-over acts as a moderating influence on money market conditions; however, relatively small changes in excess reserves can nonetheless produce comparatively large movements in short-term rates, especially on Wednesdays, and may contribute to the variability of the money stock.

David C. Beek