

# ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

## Payment System Risk Issues

by E. J. Stevens

At its May 31, 1989 meeting, the Board of Governors of the Federal Reserve System began amending its existing payment system risk policy. The amendments adopted or proposed are the outgrowth of a two-year examination of the interrelated set of international, domestic, and operational issues involved in reducing the risks created in making payments.

Payment system risk issues arise in both Federal Reserve and private large-dollar-value electronic payment systems. Risk exists in these networks when payments are financed by a special form of lending.

Federal Reserve Bank lending to banks is most familiar when it is done through the discount window, at the discount rate, secured by eligible collateral, to be repaid one or more days later. Less familiar is the special form of lending called a daylight overdraft, which occurs when a bank's payments exceed the balance in its account for some portion of the day. This net debit creates a kind of uncollateralized Federal Reserve Bank loan, made and to be repaid during the course of a single banking day, automatically, and at no charge. In private networks, such net debits represent loans to participants who have paid more than they have received, and are extended by those who have received more than they have paid.

Starting in 1986, the Board's initial policy simply required each bank to set a limit on its daylight overdrafts (in-

cluding net debits on private systems). The need for a more fully articulated policy is suggested by the broad range of payment system risk issues now recognized. This *Economic Commentary* examines the broad outline of those issues.

### ■ Payment System Risk

All payments carry some risk of loss. Cash risks counterfeit; checks risk insufficient funds and the failure of a paying bank prior to collection. In these familiar cases, long-established law and regulation allow counterparties to deal with their eyes open to risk.

Risk assignment in large-dollar-value electronic payments is neither uniform among networks nor acceptable to the Federal Reserve. On Federal Reserve networks, payments (totaling about \$600 billion daily) provide immediate, irrevocable credits to receiving banks even when paying banks have insufficient balances to cover their payments. In effect, the resulting daylight overdrafts (averaging about \$120 billion daily) represent loans from the Federal Reserve.

Irrevocable payment means that the Federal Reserve absorbs all risk that a paying bank in daylight overdraft will fail at the end of the day. Private large-dollar-payment networks have a daylight overdraft feature, but no comparable risk-absorber because payments are not irrevocable, nor are they now subject to any well-defined risk-assignment law or regulation.

An effective payment system risk policy must deal with complex, sometimes-interrelated issues. These range from how to devise a workable international division of labor among sovereign bank-regulatory agents, all the way to the basic operational question of how to define a real-time daylight overdraft that includes off-line activities.

Daylight overdraft volumes mushroomed over the past 20 years, in connection with the telecommunications revolution, the globalization of banking and securities markets, and the explosion in volume of financial market activity, especially for overnight financing.

Banking practices increasingly came to rely on free Federal Reserve daylight credit. Introduction of real-time accounting systems assisted some banks in managing their own daylight exposures in this environment. Federal Reserve accounting systems operate on a real-time basis only in monitoring problem banks and some specialized institutions. In general, Federal Reserve Banks do not prevent daylight overdrafts, but, since 1986, attempt to control daylight credit risk exposures.

The risk involved with daylight credit is that, at the end of a day, a paying bank might be unable to repay its daylight overdraft either at a Federal Reserve Bank or on a private network. This would mean that the bank had

failed, leaving the Federal Reserve or participants in a private network holding an uncollateralized debt of the failed bank.

Payment system risk policy has twin concerns. One is the direct credit risk exposure of Federal Reserve Banks. The other is potential systemic risk on private payment systems. Systemic risk refers to the possibility that the unexpected failure of one bank on a private system to complete its payments would prevent counterparty banks from meeting their own obligations, that some of their counterparties in turn would be unable to pay, and so on in a complex chain of payment failures that might disrupt the entire financial system.

#### ■ International Issues

Putting aside domestic payments for the moment, international dollar payment system risk issues involve both onshore and offshore privately operated networks that transfer dollars between domestic and/or foreign-related banking institutions. Participants accumulate net credit or debit positions as payments clear during the day. At the end of the day, net debit positions are paid from Federal Reserve Bank deposits (directly or via correspondents) and are redistributed to participants in net credit positions. The Clearing House Interbank Payments System (CHIPS), operated by the New York Clearing House, is the onshore example of such a network for multilateral position netting. The Chase-Tokyo Clearing is an offshore example.

Systemic risk is the central regulatory concern in these private networks. Using current CHIPS as an example, total payments of about \$700 billion are made through CHIPS each day, involving an average \$45 billion peak daylight overdraft exposure of net credit-position banks to net debit-position banks. CHIPS agreements among participants don't protect against systemic risk: a defaulting participant's payments and receipts are to be backed-out of the day's transactions, and a new settlement struck, but with no mechanism for

covering any illiquidity of banks in a resulting unexpected net debit position.

A common presumption has been that the Federal Reserve would intervene in the event of a CHIPS settlement failure, providing banks with the funds needed to assure settlement. Whether and under what circumstances foreign central banks should accept responsibility for lending to CHIPS participants subsidiary to their nations' banks is an open question, if only for the practical problem of operating in different time zones.

In any case, moral hazard implications should make the presumption of rescue unacceptable to the Federal Reserve, whether implicit or explicit. That is, if the Federal Reserve could be counted on to mount a rescue, the probability of needing a rescue would increase as the market discipline of counterparty credit scrutiny eroded.

Which nation's authorities are responsible in payment systems with multinational participants is an issue that is only beginning to receive attention, partly instigated by the larger regulatory issues of host country versus country of residence questions arising in banking. Which authorities should be concerned with dollar payment networks operating offshore, and for dollar payment system activities of foreign banking institutions participating in onshore networks are complicated issues. The central banks of the 10 major developed nations, the G-10, are currently exploring these issues, with the assistance of the Bank for International Settlements (BIS).

The Federal Reserve has been urging, and CHIPS has now agreed to adopt, internal guarantees of shared funding by all network participants in the event that any participant is unable to cover its deficit position on the network at the end of a day. This would reduce or eliminate systemic risk by assuring settlement without a chain-reaction of failures.

Introducing this sort of settlement guarantee has two important implications. One is that participants may change their procedures for making and settling payments in order to avoid responsibility for weaker members of CHIPS. For example, if guarantees of shared funding are required of all onshore private payment networks, offshore networks may become more attractive. Or pairs of banks may simply bypass multibank networks: FXNET has emerged recently, offering an electronic system through which pairs of banks with a large volume of payments back and forth can make and settle those payments directly.

The second important implication of a CHIPS risk-sharing agreement is that the Federal Reserve can toughen requirements for users of its own networks because of the reduced concern that removing direct credit risk might simply add to systemic risk. This might be the result if users of Federal Reserve networks could avoid their risk controls by moving payments traffic to private networks with less constraining controls.

#### ■ Domestic Issues

The Federal Reserve in effect operates two large-dollar-value electronic payment networks, Fedwire and the securities wire. Fedwire simply transfers reserve deposits between banks as they send payments. A common transaction would be one in which the corporate customer of one bank instructs it to pay the corporate customer of another bank. But the lion's share of the dollar value of payments arises from interbank overnight federal funds lending and repayment, and from trading in securities markets. The securities wire transfers U.S. Government securities in book-entry form against payment from reserve deposits, reflecting transactions involving U.S. Government securities.

Daylight overdrafts originating on Fedwire became subject to a generally non-constraining upper limit in 1986. Each user has a self-determined daylight overdraft limit, calculated within Federal Reserve guidelines. The Federal Reserve Banks record each bank's daylight over-

draft position during a day for monitoring purposes, with counseling of those banks that exceed their limits.

Fedwire daylight overdraft limits were lowered in 1988, in line with the initial policy intention to reduce System daylight credit risk exposure gradually over time. At the same time, the Federal Reserve Board of Governors initiated a thorough review of its payment system risk policy, with particular attention to the possibility of replacing or augmenting quantity limits with some form of daylight overdraft pricing, discussed below.

Daylight overdrafts originating on the securities wire have not been subject to any explicit limitations. Reducing daylight overdrafts from this source is made difficult by their concentration at a handful of banks intimately involved in the clearing and settlement of most daily trading in U.S. Government securities.

The paramount issue here is whether to treat daylight overdrafts from this source on a par with those on Fedwire, or to develop a policy that accommodates them. The latter alternative would minimize potential disruption of the U.S. Government securities market, although it could discourage development of private book-entry systems. Collateralization of overdrafts with the securities being transferred would reduce Federal Reserve risk exposure, but acquiring a perfected interest in the securities is not always possible.

The Federal Reserve Board of Governors has concluded that it will combine overdrafts originating from funds transfers and securities transfers into a single total, subject to a quantitative limit. While an overdraft originating from funds transfers alone will not be allowed to exceed the limit, an excess originating from securities transfers can exceed the limit provided that the *entire* overdraft is collateralized by some combination of securities being transferred and other acceptable collateral. This avoids disruption of the Government-securities market by al-

lowing nontransferred securities to be used as collateral in protecting against direct credit risk.

#### ■ Pricing Daylight Overdrafts

How to price daylight overdrafts on the Federal Reserve networks was one issue that emerged in recent System staff studies. Initially, three proposals gained attention. One was Federal Reserve Governor Wayne Angell's suggestion that banks borrow the amount of any daylight overdraft as a collateralized loan from the discount window at a penalty rate. In conjunction with the further proposal that the System pay a below-market rate of interest on excess reserves, the Angell proposal amounted to a stick and a carrot that would induce banks to hold sufficient excess reserves to avoid daylight overdrafts.

A second proposal, originating with the Federal Reserve Bank of New York, would have had banks hold interest earning supplemental reserve balances in proportion to their daylight overdrafts. This would have required banks to hold more excess reserves directly, but not necessarily by enough to eliminate daylight overdrafts completely.

The third proposal, and the one that the Board of Governors has published for public comment, simply would phase in a slight fee of a quarter of one percent at an annual rate on the average daily overdraft position of a bank in excess of a deductible. For example, a very large bank with a \$1 billion daily average overdraft in excess of the deductible would pay \$6,850 per business day, or \$1.8 million per year.

How high this price should be is another major issue. Pricing can reduce payment system risk to the extent that it induces banks to make risk-reducing changes in their payment practices. For example, many banks that borrow overnight federal funds go into daylight overdraft when they repay at the beginning of the next day. They then reborrow from identical sources toward the end of the day. A large share of daylight overdrafts represents this Federal Reserve daylight bridge-

lending between overnight interbank loans. A high enough fee would make it cheaper for banks to adopt alternative methods of financing.

One alternative, expected to gain widespread use, is for borrowing banks to repay only the net difference, if any, between the amount borrowed from another institution on successive days. The balance would be held as a repeated overnight loan on terms renegotiated daily. The fee would be effective not because banks paid it, but because they avoided paying it by reducing dependence on daylight credit.

For another example, banks might switch payments to existing or newly formed private payment networks that, under the Board's policy, must include arrangements for assuring settlement finality. The fee would be effective in reducing direct credit risk of the Federal Reserve, while risk-sharing agreements like those about to be introduced in CHIPS would protect against increased systemic risk.

#### ■ An Operational Issue

Developing a long-run Federal Reserve payment system risk reduction program requires a robust definition of a daylight overdraft. To be operational, the definition must allow banks to monitor their daylight overdraft positions on a real-time basis during the day.

The issue is how a daylight overdraft monitor should incorporate credits and debits to a bank's balance from offline activities such as check clearing, currency shipments, ACH payments, Treasury items, etc. Rules applicable to these activities only specify the day, not the time of day, on which funds are available. Currently, the System's ex-post daylight overdraft monitor adds the net amount of almost all of these offline activities to the monitor as a single daily adjustment. The adjustment is to the opening balance, if a net credit, or to the closing balance, if a net debit.

The current procedure cannot continue, if banks are expected to pay for daylight overdrafts, because a bank could

not verify its balance at any point during the day until after the close of business. One alternative might be to add each component of offline activity either as soon as it has been determined in a Federal Reserve Bank's accounting process each day, or at a predetermined time of day that approximates a typical accounting process. A difficulty with this is that it could add or absorb reserves to the banking system for brief periods of the day through float. For example, banks might receive credit for items in one Federal Reserve District before paying banks were charged for the items in another District.

Another alternative, and the one being proposed, is to define a simple rule that minimizes intraday float within existing legal constraints of payment recognition. The result is that payments involving the U.S. Treasury would be posted at the opening of the day, or in midafternoon, while other nonwire items would be posted at the close of business.

#### ■ Concluding Comments

Controlling payment system risk is a relatively new policy venture. Banks first had to operate within daylight overdraft limits only as recently as 1986. Changing the way banks manage their payments during the day could

reduce the credit risk and systemic risk exposures the Federal Reserve now faces in its roles as a provider of daylight overdrafts and as the potential lender of last resort. A broad range of issues has emerged as the Federal Reserve has taken the first steps toward risk reduction.

Defining a daylight overdraft is not simple, but, once defined, pricing should reduce banks' daylight overdrafts of their Federal Reserve Bank accounts. Controlling this credit risk, however, introduces new and more complicated issues. If payments traffic were to shift to private networks, it becomes necessary to assure that elimination of direct credit risk does not create increased systemic risk. Requiring risk-sharing agreements in domestic private networks could limit this counterproductive transformation.

However, concerns about effective supervision of foreign participants in private domestic networks, and the possibility of dollar-payment traffic shifting to unregulated offshore networks must be addressed. This adds a new dimension to the already thorny issue of an international division of labor among national regulatory agents that will be consistent with both fair and prudent global competition.

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