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The Weekend Eurodollar Game

WARREN L. COATS, JR.*

ABSTRACT

A growing number of large U.S. banks have used artificial Eurodollar transactions in connection with the heavier weighting of Fridays in the calculation of required reserves to significantly reduce the impact on them of that requirement. This reserve avoidance behavior bestows an unintended and inequitable benefit on those banks engaging in it, unnecessarily increases risks from credit exposures and potentially distorts money stock measures. The incentive for this activity and hence its practice can best be removed by paying interest on required reserves or weighting Fridays equally with all other business days in the reserve requirement calculations.

CURRENTLY FEDERAL RESERVE MEMBER banks must meet reserve requirements with noninterest-bearing assets—vault cash and deposits at the Federal Reserve. This requirement constitutes a tax on certain categories of member bank liabilities, and has led to ingenious efforts by banks to attract lendable funds in nontaxable (i.e. nonreservable) ways. Unfortunately, the contribution of the reserve requirement instrument to monetary control has been somewhat compromised by these avoidance activities and by the reluctance of the Federal Reserve to tighten the instrument's application for fear of losing members.¹

This paper examines the largest known example of a class of transactions undertaken solely in order to artificially reduce required reserves. The reserve saving achieved by these transactions is artificial in the sense that required reserves are lowered without any reduction in the size or scale of a bank's operations or of its "true" deposit base. Until 6 October 1979, these reserve avoidance transactions typically consisted of weekend purchases of Eurodollars from U.S. branches and agencies of foreign banks by the foreign branches of the participating member banks and are commonly referred to as "weekend arbitrage." However, these transactions are not arbitrage in the usual sense at all and are, therefore, here dubbed the Weekend Game.

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¹ As the Depository Institutions Deregulation and Monetary Control Act of 1980 is gradually implemented starting in late 1980, membership in the Federal Reserve will become irrelevant for reserve requirements which will be imposed on all domestic depository institutions on the basis of size.

In mid-1978 only 13 banks out of the approximately 5,600 members of the Federal Reserve System were continuous players of the Weekend Game on a scale sufficient to reduce Friday's net demand deposits by 10 percent or more.² At that time these Friday reductions averaged \$14 billion for those 13 banks combined.³ By June 1979 the size of the Game had increased to \$20 billion primarily by attracting six new players. This is over a 40 percent increase in less than one year. By that time eight of the largest ten, and fourteen of the largest twenty, banks were heavy players, with seven of these managing (i.e. daring) to lower their net deposits by over 20 percent on average.

Section I describes the two main versions of the Weekend Game and how these transactions artificially reduce required reserves. Section II examines the factors necessary for the Game's profitability and reflects on the determinants of its current and potential size. Section III outlines a change in accounting rules which would make this particular Game unprofitable.

I. Playing the Game

Required reserves are determined on the basis of net demand deposits (plus time and savings deposits and from time to time some other liabilities as well). Net demand deposits are defined as gross demand deposits (which include a bank's own checks, i.e., "officers' checks") minus cash items in the process of collection and balances due from other domestic banks. Normally, the purchase and repayment of funds by banks, (e.g. an overnight Eurodollar transaction) generates offsetting changes in net demand deposit. The purchase of Eurodollars lowers net demand deposits for one day, while their repayment raises net demand deposits for one day. The essence of the Weekend Game is the exploitation of the treatment of Fridays as three days in the reserve calculation by generating the temporary drop in net demand deposits on Friday so that the usually offsetting one day increased on Monday or Thursday is not fully offsetting.

There are two general versions of the Game. About 30 percent of the Game by volume is currently played in its Thursday-Friday version, with the remaining 70 percent reflecting the Friday-Monday, or weekend, version.

A. The Thursday-Friday Game

The Thursday-Friday version of the Game is played by lending clearing house funds to a nonmember (X) on Thursday and receiving repayment in clearing

² They are so identified from individual bank deposit data supplied by the Federal Reserve Board by virtue of consistently having lower net deposits on Friday relative to the rest of the week for each of the 10 weeks in the period from 20 July 1978 to 21 September 1978 and an average Friday reduction over that period of 10 percent or more. Three banks with less than \$50 million in total deposits each also met this criterion but for special reasons are not thought to be players (though they are beneficiaries of the weekend nonetheless). For any one of these weekends, a 10 percent reduction in net deposits on Friday reduced net deposits by approximately 3 percent per day for the week and required reserves by 16¼ percent of that amount two weeks hence.

³ This is estimated as the reduction in net demand deposits of the playing banks on Friday, relative to the average level for the five-day business week. There is a small downward bias in the reported figures due to the failure to adjust the business week average for holidays.

house funds on Friday.⁴ On Thursday the member bank issues an officer's check to X. On the asset side of its accounts it records a loan and on the liability side an officer's check. This raises net deposits on Thursday. When the funds are "actually" delivered on Friday, the lending bank can cover itself in the same-day (Federal) funds market if it does not actually have the reserves to lend. As this is a Game transaction to begin with, X can provide the lender with the very funds it receives on Friday. Though these transactions are presumably made in the market at arm's length, in effect X never sees the funds it borrows and the lending bank never loses them.⁵ The Friday delivery of the Thursday loan removes the officer's check from the member bank's books, thus returning its net deposits to their original level. In addition, X initiates repayment of the loan on Friday by issuing a check (an officer's check if X is a bank) collectable on Monday. As a result, the member bank loses the loan and gains a cash item in the process of collection. This temporarily reduces net deposits in time to be counted for three days—Friday through Sunday. On Monday the member bank loses the cash item as the funds in repayment of the Thursday loan are collected. This returns its net deposits to their original level. Finally, Friday's Fed funds purchase is reversed on Monday so that, in effect, reserves have never changed banks.⁶

X, the Thursday borrower, can be a bank or a firm, but since it gains the hypothetically reservable deposits lost by the player, it must have lower reserve requirements than the playing member bank if the Game is to be mutually profitable. X has most commonly been the domestic office of a foreign bank which is not currently (Fall of 1980) subject to Federal Reserve requirements. Likewise, the Game would not be profitable if Friday's net deposits did not contribute more to the weekly average than Thursday's as the Game causes equal and opposite Thursday-Friday deviations.

B. The Weekend Game

The Game requires a Friday (or preholiday) receipt of clearing house funds—either in repayment of a loan, as in the Thursday-Friday version, or in receipt of a borrowing. In the latter case, the playing member bank borrows clearing house funds from X on Friday and repays them on Monday. This is typically done

⁴ Clearing House funds, the traditional form of payment for Eurodollar transactions, are payments which are not settled, i.e. for which "good" funds are not delivered, until the next day of business. Good, or immediately available (i.e. same day) funds are often called "federal funds" because same-day settlement is made possible by the willingness of the Federal Reserve to debit and credit reserve accounts the same day payment instructions are received.

⁵ The Federal Reserve currently extends unlimited, interest-free daylight credit to its member banks by allowing within-day overdrafts of member bank reserve accounts with the Reserve Banks. For this reason, a member bank can pay out good funds (as the delivery of its Thursday loan of Eurodollars) to a Eurobank on Friday morning which the Eurobank lends back (as a Fed funds sale) Friday afternoon without the member bank's close of business reserve account balance being altered in any way. The Fed sees and uses only the close of business balance. See Warren L. Coats, Jr. and Allen Frankel [1].

⁶ A more detailed description and bank balance sheets depicting both the Thursday-Friday and the weekend versions of the Game can be obtained from the author.

through a foreign branch of the playing member bank.⁷ The offshore branch borrows funds from nonmember X. X writes a check which is presented to the parent member bank, which then records a liability due to its foreign branch and a cash item in the process of collection. The balances due to its foreign branch are treated as "other liabilities," i.e. they are not added to reservable deposits, while the cash item reduces net deposits.

On Monday the reserves borrowed on Friday are "actually" delivered and the member bank loses the cash item. This raises its net deposits back to their original level. However, as the member bank initiates repayment of the borrowing in clearing house funds, it reduces deposits due to its foreign branch and increases gross demand deposits to reflect the newly issued officer's check. This raises its net deposits above their original level until the funds are actually delivered on Tuesday. Once again the ability to weight the fall in Friday's net demand deposits by 3 means that the otherwise offsetting Friday-Monday deviations leave a net two-day reduction in the weekly average of net demand deposits.

If Friday's borrowing had been received in good funds on Friday, net deposits would not have been lowered, as no cash item would have been generated. Likewise, repayment of the loan on Monday in Federal funds generates no increase in net deposits, as there is no uncollected officer's check on the books. Therefore, borrowing clearing house funds on Friday and repaying Federal funds on Monday causes no increase (above the original level) in reservable deposits to net out against Friday's decrease. This version of the Game lowers reservable deposits by a net of three days rather than the two-day net reduction resulting from a symmetrical clearing house receipt and repayment. The data through 1979 indicated that banks did not push the Game this hard.

Transactions of this sort clearly contravene the purpose of the cash items and due from deductions.⁸ In addition, these transactions result in an unequal application of reserve requirements among banks as they are regularly utilized by only a few members. Many member banks apparently are unable to conveniently arrange such transactions, while other banks presumably elect not to participate on grounds that these activities violate the spirit of reserve requirements.

Moreover, the Weekend Game has exposed some large member banks and the primary Eurodollar clearing mechanism to unnecessary risk. A number of banks

⁷ Currently, the reserve requirement on member bank borrowings from their own foreign branches is zero percent. From late 1969 to August 1978, net liabilities to foreign branches—due to foreign branches less claims on foreign branches—were subject to reserve requirements which ranged from 4 to 20 percent, and from August 1978 to October 1979 and again since 24 July 1980 the requirement was zero. The member bank's reserve requirement is lowered by the weekend transaction as long as this requirement is less than that on its demand deposits.

⁸ The main purpose behind the cash items and due from deductions is to avoid having more than one bank maintain reserves against the same deposit balance. In the absence of such deductions, if a customer of Bank A were to deposit a check drawn on Bank B, both banks would be required to maintain reserves against this balance until the check had cleared. However, with either of these deductions, Bank A does not have to hold reserves against this deposit until it has good funds, essentially when the check clears and Bank B has reduced its reservable deposits.

⁹ The Clearing House Interbank Payments System (CHIPS) is a computerized funds transfer network linking New York commercial banks, Edge Act corporations in New York and New York

which are members of the New York Clearing House serve as the CHIPS⁹ settling correspondents for the New York offices of foreign banks. These correspondent banks customarily extend daylight credit to respondents against expected receipts. Because of the enormous scale of the Weekend Game, some of their individual respondents have, on occasion, required daylight credit in good funds of more than \$1 billion, an amount well in excess of the member bank's legal limit.¹⁰

Finally, the Weekend Game can take forms which distort measured money stock figures. Cash items in the process of collection are deducted in arriving at the demand deposit component of the monetary aggregates on the assumption that there are offsetting officers' checks or deposits in the bank against which the check is drawn. Such deposit data is currently collected from the U.S. agencies and branches of foreign banks believed to be the principal suppliers of weekend cash items deductions and added into the money stock as a cash item bias correction. If these offices shift sides in the Game, and the Friday suppliers of clearing house funds become foreign banks (directly) and large private depositors with high creditworthiness, the hypothetically offsetting increase in the money stock on their records probably could not be measured. With these versions of the Game, the participating member banks will record an increase in cash items which will reduce the measured money stock when no real reduction has occurred. If all Game transactions had switched to these versions in mid-1979, measured M1 would have fallen about \$6 billion (2%).¹¹

II. Game Profits

Several provisions of Regulation D and standard practice combine to make this Game possible: (1) there must be an ultimate lender of clearing house funds who is not subject to reserve requirements (or who is subject to a lower reserve requirement than the borrowing bank); (2) the net deposits of some day(s) of the week (Friday) must count for more than other days in computing the daily average level; (3) the participating institutions must be able to deal in both clearing house and Federal (i.e. same-day) funds in order to generate a "cash item" or "due from" (CIPC or DF) without losing reserves (by effectively borrowing in Fed funds what is lent the day before in clearing house funds); (4) uncollected funds must be recordable as nondeposit items in order to avoid the usual net deposit increasing contra entry to CIPC or DF; and (5) the net earnings on the reserves freed from the reserve requirement must exceed the net cost of the transactions. The failure of any one of these conditions would make the Game

offices of foreign banks. It is estimated that 90 percent of all international dollar transactions move through CHIPS.

¹⁰ In order to reduce exposure to risk, the members of the New York Clearing House have established the objective of switching to same-day settlement of CHIPS transactions. However, weekend activity could continue through the substitution of paper checks for CHIPS transactions so that Clearing House correspondents would remain exposed to risk.

¹¹ The implementation in 1980 of the International Banking Act of 1978 is very likely to increase the volume of such distorting transactions with no direct means of adjusting the reported figures.

unprofitable; therefore, these conditions guide and inform the search for regulatory modifications which will end it.

A. Gross profits

The profit from the Game is the net yield from lending the reserves freed from the reserve requirement less the net cost of the operation. This profit is shared between U.S. member banks and their nonmember Game partners. Ignoring transactions costs, the profit rate for the Game is:

$$\Pi = RF(i^f - i^r) - (i^0 - i^f)^{12}$$

where

Π = profit per dollar borrowed, per year

RF = reserves freed per day, per dollar borrowed

i^f = Federal funds rate

i^r = rate paid by Federal Reserve on member bank reserves

i^0 = Eurodollar overnight lending (bid) rate

For the symmetrical versions of the Game (both borrowing and repaying in clearing house funds) RF is $2r/7$, where r is the applicable reserve requirement ratio (currently $16\frac{1}{4}$ percent for the Game player).¹³ For the asymmetric version, RF is $3r/7$. With the then-prevailing Federal funds rate of 10 percent, the Game transactions of the heavy players generated a gross profit equivalent to \$93 million per year in June 1979 (see Table I).¹⁴

B. Profit sharing

The net profit to member bank players depends on the cost incurred in making the necessary transactions. As the fixed transactions costs are very small, the

¹² This formulation ignores the current practice of basing the current week's reserve requirement on deposits two weeks earlier. The introduction of "lagged reserve accounting" means that the profit rate, Π , depends on the Fed funds rate attained two weeks in the future on the reserves freed at that time as a result of the drop in net deposits in the current week. However, the second i^f variable (i.e. the rate that helps determine the borrowing spread) remains the current week's rate (the Friday rate for the Thursday-Friday Game and the Monday rate for the Weekend Game).

¹³ Prior to 24 August 1978, there was a positive reserve requirement on Eurodollar borrowings and on a member bank's net balance due to its foreign branches. To the extent the Game was played in ways which increased these reservable liabilities, the value of RF was accordingly diminished to $(2r - 3rr)/7$ where rr is the reserve requirement ratio on Eurodollar borrowing and net due to foreign branches. Between 25 October 1979 and 23 July 1980, all increases in managed liabilities over the base level existing in October 1979 have been subject to a reserve requirement (8 percent from 25 October 1979 to 2 April 1980; 10 percent from 3 April 1980 to 11 June 1980; and 5 percent from 12 June 1980 to 23 July 1980); however, virtually no reserves were impounded by this requirement, as managed liabilities did not generally increase over the base level.

¹⁴ The average Friday reduction in net deposits was \$20 billion in June. If the resulting daily average reduction of \$5.7 billion were maintained for the year (ignoring other than weekend holidays), then the profit rate of 0.0046 [i.e., $(2/7)(0.1625)(0.10)$] implies an annual profit of \$93 million. This assumes that $i^r = 0$ and $i^0 = i^f$.

Table I
The Size and Profits of the Weekend Game

	Net demand deposits			Potential profit from reserve savings at 10% yield (millions of dollars per year) ^a
	Friday reduction (billions of dollars)	Average reduction per day (billions of dollars)	Average percentage reduction per day	
Mid-1978				
All banks	16.6	4.7	2.5	76
All players (13 banks)	14.0	4.0	10.1	64
Players in top 20 (10 banks)	13.6	3.9	14.3	63
June 1979				
All players (19 banks)	20.4	5.8	11.7	94
Players in top 20 (14 banks)	19.9	5.7	16.4	93

^a The actual profit realized by member bank players was less by about the ¼ of total profits shared with their nonmember partners.

major cost is the net charge for the use of the funds borrowed. This cost for the weekend version will equal the difference between the rate set on Friday for the funds delivered on Monday less the Fed funds rate earned on those funds Monday.

Branches and agencies are attracted as partners (suppliers of the needed deductions) by receiving a share of the Game profits. This is accomplished by a spread between the Eurodollar rates at which they lend and the Fed funds rates at which those loans are covered. To illustrate, a member bank involved in a Friday-Monday transaction actually receives borrowed funds on Monday and normally must return these funds to the lender on Tuesday. As a result, the member bank is in a position to earn the Federal funds rate on Monday, but pays the Eurodollar rate over the weekend.¹⁵ If the cost of the weekend Eurodollar borrowing equaled the Monday Federal funds rate, the member bank would benefit by the full amount of the reduction in required reserves. However, such an outcome would provide no inducement for the potential partner to participate, since it would pay the same amount of interest on the Federal funds purchased on Monday (to cover its Friday loan of clearing house funds) as it would earn on the loan itself. As a result, the return on a weekend Eurodollar loan must be higher than the expected cost of Federal funds on Monday in order to encourage branches and agencies or other nonmembers to participate.

¹⁵ Eurodollars borrowed on Friday are on the books for three days but good funds (delivered on Monday) are only held for one day. As a result the Friday rate is about one-third the prevailing rate. Likewise, the Thursday Eurodollar rate is about three times the prevailing rate as it is on the books for one day while actually supplying good funds for three days. Unlike the Game transactions, this is simply an arbitrage adjustment in rates to the coexistence of clearing house and Fed funds and the 3-day Friday. Similar arbitrage adjustments in exchange rates are analyzed by Maurice D. Levi [2]

A forward market in Fed funds makes it possible to firmly establish the desired spread, though conversations with some of the participating banks suggest that it is not widely used. This spread averaged about 230 basis points in 1979 implying a sharing of about one fourth of the gross profits by the member banks with their nonmember partners.¹⁶ The Federal Reserve's shift to a reserve strategy on 6 October 1979 resulted in large losses for many foreign bank lenders over that weekend as they covered Friday's loans at Monday's much higher funds rates. This experience and the increased volatility of interest rates since the policy shift have made it more difficult to estimate the potential profit to be shared, and increased the perceived risk of the transactions. These factors plus the inclusion of compensation to the lenders (when they are U.S. branches and agencies of foreign banks) for the temporary 8 and then 10 percent marginal reserve requirement on managed liabilities appear to have significantly increased this spread in the first half of 1980 and reduced the size of the Game to less than half its previous volume.

C. Game size

Fear of Federal Reserve disapproval is most likely a major factor limiting the size of the Game. While those who play tend to play in a massive way, they are very small in number. There are limits to what any individual bank or firm can prudently or legally borrow or lend to a single bank and, therefore, the resulting risk exposure is likely to limit the Game to large, well-known banks. Some of the large bank players appear to operate close to these limits and double the Friday net deposit reductions by playing both the Thursday-Friday and weekend versions up to those limits.

As large as it already is, it appears that the size of the Game could expand significantly (primarily by adding new players).¹⁷ The implementation of the International Banking Act of 1978 starting in late 1980 is very likely to increase the size of the Game by providing the relatively aggressive U.S. agencies and branches of foreign banks with the profit incentive to join the Game on the member bank side. If under this Act the same marginal reserve requirements are applied to branches and agencies of foreign banks that apply to the member banks that play the Game, many of these institutions will change sides in the Game, becoming additional demanders of cash item and due from deductions rather than suppliers in an effort to minimize this new "tax."

¹⁶ In the absence of weekend reserve avoidance transactions, the risk-adjusted overnight Eurodollar rate and Federal funds rate should be equal as indeed they are during the week. The increase in the Friday Eurodollar rate relative to the Friday Fed funds rate provides a measure of the anticipated profit split. Specifically, the share of the total gain going to the member bank is measured as the ratio of the members' actual gain from borrowing Friday Eurodollars and obtaining the reserve savings (compared to a Friday Fed funds purchase without reserve savings) to the total value of the reserve savings (2(0.1625) times the Fed fund rate). This point and the underlying calculations are due to Allen Frankel.

¹⁷ Allowing these transactions to continue constitutes tacit approval or acceptance of their legitimacy. With time, the large U.S. banks currently abstaining from the Game in the belief that they constitute an illegitimate evasion of reserve requirements are likely to reconsider and join their more aggressive competitors.

A variety of nonmember institutions could readily supply this increased demand for cash item and due from deductions. Among these are foreign offices of foreign banks which could, for example, lend Eurodollars "directly" by writing their own checks on their deposits with unaffiliated U.S. correspondents. Since they would be issuing checks drawn on unaffiliated U.S. banks, no U.S. banking offices would be required to claim such a draft as a reservable deposit.¹⁸ The potential for non-U.S. offices of foreign banks to supply cash item deductions is substantial. Probably less important would be larger domestically-chartered nonmember banks which could operate in much the same way that branches and agencies do currently.¹⁹ Even large corporations—both domestic and foreign—which have banking relationships with clearing house banks could become active partners in the Weekend Game. A corporation, for example, can deposit overnight funds with a foreign branch of a U.S. bank on Friday and the check (drawn on some other bank) can be used by the parent to add to its cash item deductions over the weekend. Thus, while the imposition of comparable marginal reserve requirements on branches and agencies will end the use of what have been the most convenient suppliers of cash item and due from deductions, the role is easily shifted to their foreign parents and others as the somewhat increased costs are small relative to the gains from such transactions.

III. Ending the Game

In light of the foregoing considerations, it would be desirable to end the Game. The Game could be made unprofitable, hence ended, in several ways, though for practical or cost reasons some are more promising than others.

A. The payment of interest on reserves

By far the preferred remedy for the Weekend Game would be the elimination of the reserve tax by paying a market-related interest on required reserves. This step would also end the incentive for the large banks to withdraw deposits from the U.S. banking system by channeling funds through their offshore branches. In addition, the payment of interest on required reserves has long been urged on efficiency grounds. The revenue lost to the U.S. Treasury as a result of the payment of interest on reserves would accrue instead to bank customers. Unfortunately, this alternative appears politically unacceptable at this time.

B. A business day's reserve computation week

The Game is profitable in part because a borrowing-repayment cycle can be arranged to have asymmetric collection periods. If a one-day borrowing is collected in one day (CIPC or DF carried one day) and returned in the same number of days (the officer's check or "due to" also carried one day), it has no net impact

¹⁸ Under the International Banking Act, a U.S. branch or agency must add to its gross demand deposits any checks drawn on it by its foreign affiliates or parent.

¹⁹ This will no longer be possible after the implementation of The Depository Institutions Deregulation and Monetary Control Act of 1980.

on the week's average net deposits. Because the Federal Reserve and bank clearing houses are closed over the weekend and on holidays, the normal collection period is extended on these occasions. On weekends, collection of next-day funds takes three days while repayment only takes the normal one day, hence the net two-day reduction in reservable deposits.

Insuring symmetry in delivery periods would make the Game unprofitable. This can be achieved by removing from the reserve computation week all days when good funds cannot be posted to a member bank's reserve account. Currently, this means all weekends and bank holidays (within a member bank's Federal Reserve district). The week's required reserves would then be calculated by adding up r times seven-fifths of each business day's net deposits when the week contains five business days.

The weekly level of reserves maintained in satisfaction of the requirement could be calculated either as it is now on a seven-day basis or also on a business-day basis. Either approach would end the Game because the fall in net deposits on Friday would be valued equally with the increase in net deposits on Monday; hence the week's daily average is unaffected by these transactions. However, the anomaly of treating deposits on Friday (and every other business day) as 7/5th days, but reserves on Friday as three days, has some problems of its own.²⁰ An outflow of reserves on Friday (cash for the weekend) causes three times the loss of reserves as on any other business day.²¹ Therefore, systemwide reserve changes on Friday have a larger effect on the daily average level of reserves than do changes on other days, though they are easily neutralized by appropriate open market operations. In general, banks would be willing to pay more for deposits that exhibit the desired intraweekly pattern, but the overall effects on rates would be negligible.

The alternative proposal to treat both the deposit and reserve calculations on a business week basis is free of this problem. While this proposal makes the Game unprofitable without the peculiarity discussed above, it would create a somewhat different problem. Banks would no longer be willing to buy reserves on Friday (which must be held and paid for until Monday) at prevailing prices when they only contribute to one day's worth of the reserve requirement. Indeed, they would find it very profitable to sell reserves on Fridays (for three days of interest but only one day's loss of reserves) and cover the shortfall by buying additional reserves on other days. Quite obviously, where satisfying the U.S. reserve requirement is the dominating reason for holding reserves, the Fed funds market would immediately mark the Friday rate down to one-third the prevailing rate on overnight money (as is already the case with the Friday "overnight" Eurodollar rate) and things would go on as before.²²

²⁰ This was pointed out by Allen Frankel.

²¹ Such an intraweekly pattern and the three-day treatment of reserves outstanding at the close of business Friday enhances the attractiveness of 24-hour teller windows ("The Citi never sleeps"). To the extent cash is easily obtained any time over the weekend, less is likely to be withdrawn on Friday. Furthermore, any cash actually withdrawn between the close of business Friday and Monday is counted as still in the vault for reserve requirement purposes for banks which are closed (other than for their 24-hour windows) over the weekend.

²² Arbitrage would prevent the weekly average of one-day rates from differing from the one-week

On the other hand, producers could lower their cost of funds by shifting their productive activities to the weekend with obvious real consequences. While *overnight* funds on Friday are just as expensive as any other day because they must be held until Monday, a producer needing three-day funds will find them one-third the prevailing price on Friday. This consideration is important only if producers (i.e., the ultimate recipients of borrowed funds) require or can benefit from loans of "truly" less than a week's maturity and can exploit the rate differential by shifting their economic activity to the weekends.

From time to time, other approaches have been discussed or considered. These include the imposition of reserve requirements on nondeposit liabilities, disallowing cash item and due from deductions on nondeposit items and disallowing all cash items and due from deductions. All these approaches are defective.²³ In fact, the only approach that is certain to be effective because it removes the very incentive to reduce reserve requirements which underlies all reserve avoidance activities is the payment of interest on required reserves.

IV. Summary

A growing number of large U.S. banks have used artificial Eurodollar transactions in connection with the heavier weighting of Fridays in the calculation of required reserves to significantly reduce the impact on them of that requirement. This reserve avoidance behavior bestows an unintended and inequitable benefit on those banks engaging in it, unnecessarily increases risk from credit exposures and potentially distorts money stock measures. The incentive for this activity and hence its practice can best be removed by paying interest on required reserves or weighting Fridays equally with all other business days in the reserve requirement calculation.

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rate (by more than risk and transactions cost factors). Therefore, with a five-day reserve maintenance week, the one-day rate would be $7/5$ of the implicit daily rate from a seven-day week and the "weekend" rate would equal $7/15$ of that rate for each of the three weekend days.

²³ A detailed discussion of the defects of these alternative proposals is available from the author.