

The Impact of the U.S.A. Federal Funds Market on the International Exchange Market

The quotations — both spot and forward — for all currencies over a period of time show fluctuations of a greater or less degree; the same can be said of the deposit rates in the Euro-currency market.

These fluctuations are obviously irregular and they depend upon the strength of the respective currency as well as upon the particular demand and supply factors in the market.

Only the dollar presents recurrent appreciations that are followed by equally recurrent depreciations. The appreciations can be noted in the spot and forward quotations of each Tuesday (value Thursday) and, in a far more striking manner, in the rates for one-day dollar deposits running from Thursday to Friday, which reach very high levels. The depreciations can be noted the following day (that is, on Wednesday) for the spot and forward quotations, and from Friday to Monday for the one-day dollar deposits' rates.

The purpose of this article is to throw some light on the above mentioned phenomena.*

First of all it seems useful to point out that the appreciations and depreciations mentioned are determined by the particular character of the U.S.A. banking system which, generally speaking, provides two kinds of cheques by means of which funds may be transferred: cheques payable at the Federal Reserve Banks and cheques payable through the Clearing House Associations.

The former are termed "Federal funds" and their proceeds are immediately available, that is, they are credited and debited the same day of their presentation; the latter are called "Clearing House

funds" and can be presented to the paying bank for settlement in Federal funds only the next business day after their issue through the Clearing House Association. As a matter of fact, when the banks involved are located in different districts (there are 12 Federal Reserve districts), additional time is necessary for final settlement.

Federal funds are therefore the funds held at the Federal Reserve Banks, and they do not bear interest, no matter how long the duration of the deposit. Nevertheless, they are in demand by banks, private corporations, dealers, and so on, inasmuch as they are the only useful means of carrying out many transactions.

The bulk of the Federal funds are represented by the legal reserves of the "member banks", which are compelled to keep them with their respective Federal Reserve Bank. The calculation of the minimum reserves to be held by central reserve city banks (namely, banks located in towns where Federal banks operate) on deposit with Federal banks is made on the basis of average daily figures over a weekly settlement period ending on a Wednesday (precisely from Thursday morning to Wednesday evening), while the calculation of the reserves to be held by country banks (that is, banks located in towns where there is no Federal bank) is made on the same basis but over a bi-weekly settlement period also ending on a Wednesday. The calculation of the reserves over weekends when the banks are closed is made on the basis of the closing balance on Fridays. This means that for average calculation purposes (weekly or bi-weekly) the amounts in Federal funds on Friday are calculated for three days.

To introduce, as an addition to the usual means (discounts or advances with the Federal Reserve Bank, selling or buying Treasury bills, etc.), a new instrument useful for keeping the reserves at the proper figure and for the full utilization of bank resources, Federal funds markets have begun to operate in the U.S.A., the most active being that in New York. In these markets the demands and supplies of banks as well as of other operators meet each day. The price, or rather the rate, at which Federal funds can be lent or borrowed is conditioned by the following factors:

— discount rate at which member banks can obtain advances from the competent Federal bank;

— yield of Treasury bills, or alternative investments. Obviously banks having excess Federal funds will invest them in Treasury bills if the return from these is higher than the yield obtainable from

* The whole subject has been dealt with by the writer in "Il mercato dei 'Federal Funds' negli U.S.A. e i suoi riflessi sul mercato internazionale", *Bancaria*, Rome, 1966.

Federal funds lendings. The reverse would happen when banks have Treasury bills available and need Federal funds.

However, over recent years, Federal funds rates have mainly been above the discount rates. During 1966 Federal funds have been traded quite frequently at rates close to 6 per cent, or even higher, especially in early September, in October and November.

The reasons for this can be found in the fact that the banks, in order to cover their mounting reserves' deficiencies arising from the substantial increase in their total loans, have been making purchases of Federal funds at rising rates. On the other hand, interest rates in the U.S.A., under the impact of the world-wide dearth of credit, have reached their highest point since the late 1920s, with a prime rate currently (November 1966) standing at 6 per cent p.a.

Relation between the Federal Funds Market and the International Foreign Exchange Market

Before analysing how the Federal funds market influences the international foreign exchange market and determines the phenomena described in the opening part of this article it is, perhaps, useful to underline that:

(1) banks are required to maintain a certain ratio of legal reserves to demand and time deposits;

(2) legal reserves are not interest-bearing;

(3) for the calculation of the reserves, the balances existing on Fridays are taken to cover three days; in other words, the balance on Friday is calculated for Saturday and Sunday as well. Moreover, also the balances existing on a day preceding a holiday within the week are likewise calculated twice;

(4) with regard to the amount of deposits, each bank can maintain temporarily either a deficiency or an excess of reserves. In the first case, the bank is faced with the problem of restoring its reserve position; in the second, the bank has to find a way of investing the surplus reserves, which do not bear interest;

(5) the concomitance of all these factors has resulted in the creation of a special market in which demands for and supplies of Federal funds are centralized;

(6) Federal funds rates have a strict relationship with monetary market interest rates, as Federal funds can be obtained by selling Treasury bills, short-term negotiable paper, etc., or can be invested in these same types of assets.

To make the problem clear it is however very important to point out that banks with a deficiency of reserves can also adjust these by accepting deposits in the Euro-dollar market or by purchasing dollars against other currencies in the international foreign exchange market. For this reason there is a close interrelationship between the rates of Federal funds, value Friday, and the rates on the international market of:

(a) day-to-day dollar deposits;

(b) spot dollar quotations, value Thursday;

(c) Euro-dollar forward quotations and dollar deposits for different periods, even though in less degree.

The extent of the Federal funds market impact on the Euro-dollar and other Euro-currencies is clearly demonstrated by the following facts which, as may punctually be observed, recur weekly:

(1) the Euro-dollar rate for deposits from Thursday to Friday is now about 18 per cent p.a. This represents an increase of more than 11 per cent p.a. in comparison with the rates applied to dollar deposits of one day on any other day of the week;

(2) in contrast with this Thursday to Friday rate of 18 per cent p.a., an abundant amount of weekend dollars is offered (available from Friday to Monday) at rates ranging from 2 per cent to 3.5 per cent p.a., the result of heavy liquidations of the banks' Thursday dollar positions;

(3) as a consequence of the factors mentioned under (1) and (2), rates of dollar deposits that run (or are due) from Thursday or Friday vary from those applied to dollar deposits running (or due) from the other days of the week.

At the same time, forward quotations of other currencies against the dollar are affected by the same factors.

In both cases the difference between the rates and quotations mentioned becomes more pronounced the shorter the duration of the transactions.

As far as dollar deposits rates are concerned the following example will make the concept clearer:

EURO-CURRENCY MARKET
(% per annum; average between bid and offer)

Rates for day dollar deposits	
from Monday to Tuesday (one day)	6.25
from Wednesday to Thursday (one day)	6.25
from Thursday to Monday	6.75
from Thursday to Friday (one day)	18.00
from Friday to Monday	3.00
Rates for one-month dollar deposits	
Monday (value Wednesday)	7.00
Tuesday (value Thursday)	7.37
Wednesday (value Friday)	6.70

The enormous difference existing between the rate applied from Thursday to Friday and that for any other day or short period becomes immediately evident when the figures regarding dollar deposit rates for one or more days are examined.

The particular Thursday dollar rate moreover influences the rate of the Thursday-Monday deposit, which is higher than that for Monday-Thursday. This happens even though the weekend dollar rate relating to three out of the four days of such deposits is very low.

The 6.75 per cent rate registered for such deposits is in fact the average of the Thursday-Friday deposit rate (which is already known at the time of the transaction) and the rate anticipated, at the same time, for the week-end rate, i.e., 18 per cent for one day plus 3 per cent for three days.

To examine now the rates for one-month deposits, it is seen that the rate applied to deposits effected on Tuesday (value date Thursday) is higher than either the rate applied to those effected on Monday (value date Wednesday) or that applied to those effected on Wednesday (value date Friday). As a consequence, lenders of time-deposits obtain particularly advantageous rates when they operate with value date Thursday, less attractive ones if with value date

Wednesday, and still less remunerative rates if with value date Friday.

Obviously, the reverse is the case where borrowers of such time-deposits are concerned.

Naturally, these same reasons also affect, though to a less degree, the rates for time-deposits of more than one month.

The influence of the factor previously mentioned on swap rates (which ultimately reflect the trend of deposit rates) is clearly shown by the following examples.

ONE-MONTH SWAPS AGAINST THE DOLLAR

	Monday quotations		Tuesday quotations	
	bid	offer	bid	offer
Pound sterling	20	17	18	15
Italian lira	-10	+10	-20	par
German mark	36	41	34	39

Before commenting on such rates, it is expedient, perhaps, to recall that:

(1) transactions on the exchange market are normally at two working days' value;

(2) a swap operation consists of a spot purchase, in the same contract, of foreign exchange against a forward sale of an equal amount of foreign exchange, the rate for which is fixed at the time when the spot transaction is negotiated;

(3) in such operations the rate fixed for the spot transaction is not important (generally, the average buying and selling rates of the moment are applied). On the contrary, the rate for the forward transaction is very important as it determines the loss or gain on the exchange of the two currencies;

(4) quotations, in fact, are expressed in terms of differences in relation to the spot rate, and represent the rates applicable for forward transactions. The first figure is the "bid" or purchasing rate, and the second the "offer" or selling rate;

(5) when the first figure is larger than the second it means that the currency in terms of which the quotation is expressed is at

a premium in respect of the other. In this case, the rate for the forward transaction is obtained by subtracting the margins quoted from the rate fixed for the spot transaction. When, on the contrary, the first figure is smaller than the second, it means that it is the other currency which is at a premium in relation to the first, and the rate for the forward transaction is obtained by adding to the spot rate the margin shown for the forward transaction;

(6) in almost all countries the rates of exchange are expressed in terms of the amount of the national currency in relation to the unit (or 100 units) of a foreign currency (direct quotation), while in Great Britain they are expressed in terms of the amount of the foreign currency in relation to the unit of national currency, namely, of sterling (indirect quotation). For this reason some of the explanations that follow may appear to be contradictory.

As has already been said, the swap quotations of two currencies indicate substantially the difference to be added to or subtracted from the spot quotation of the moment, as the case requires.

The rates for spot transactions naturally vary in relation to the demand and supply on the market but, for simplification purposes, let us suppose they have not changed during the days under review. A certain static condition of the market is also assumed in relation to the swap rates quotations.

On this assumption, the above mentioned rates might be substituted by the following ones:

ONE-MONTH FORWARD DOLLAR QUOTATIONS

	Spot rates for Monday and Tuesday	Forward rates for			
		Monday		Tuesday	
		bid	offer	bid	offer
Pound sterling/\$	2.8016	2.7996	2.7999	2.7998	2.8001
Italian lira/\$	624.80	624.70	624.90	624.60	624.80
Mark/\$	3.9735	3.9771	3.9776	3.9769	3.9774

It is worth noting that such quotations are valid for outright transactions too. Also in these operations, however, the cover is usually constituted by a spot transaction of opposite sign: for

example, a forward transaction involving a purchase of sterling against dollars is matched by a spot transaction involving a sale of an equivalent amount of sterling against dollars.

The two transactions, taken together, therefore represent equally a swap operation, notwithstanding that each of them is correlated to a different customer.

Let us take some practical exemplifications, starting with the quotation on Monday relating to a sterling-dollar swap at one month from date.

Supposing that the spot sterling-dollar quotation is \$2.8016 = 1 pound sterling, when the bank's dealer gives the quotation 20-17 he means to say simultaneously:

(1) at 20 I am prepared to sell, spot, pounds against dollars at \$2.8016 for £1, that is to give, for instance, £100,000 against \$280,160, and to repurchase them at one month forward at \$2.7996 for £1, namely, to take back the £100,000 by disbursing \$279,960, thus making from the exchange of the two currencies a profit of \$200, corresponding to a premium of 0.86 per cent p.a.;

(2) at 17 I am prepared to buy, spot, pounds against dollars at \$2.8016 for £1, that is, to receive £100,000 against \$280,160, and to resell them at one month forward at \$2.7999 for £1, namely, to deliver the £100,000 against \$279,990, paying, that is, a premium of \$170, corresponding to 0.72 cent p.a.

In clearer terms, when the dealer, always against dollars, sells on Monday spot pounds for repurchase at one month forward, he is asking a premium equal to 0.86 per cent; on the contrary, when he buys spot pounds for resale in the same way at one month, he is prepared to pay a premium equal to 0.72 per cent. As a consequence, on Monday (that is, value Wednesday) the average difference between the rates of return of the two currencies is estimated at 0.79 per cent $\left(\frac{0.86\% + 0.72\%}{2} \right)$ in favour of the pound sterling.

The same calculations can be made for the quotation 18-15 regarding the pound sterling-dollar swap at one month forward indicated for Tuesday (value Thursday).

Obviously, the amount of the premium which the dealer is prepared to receive or offer in the respective transactions would differ from those calculated for Monday (0.77 per cent instead of 0.86 per cent and 0.64 per cent instead of 0.72 per cent).

The reasons for such differences in the rates of swaps are equally connected with the trend of one month deposit rates. The difference in favour of sterling in this case (Tuesday) is smaller — on the average 0.705 per cent $\left(\frac{0.77\% + 0.64\%}{2} = 0.705\right)$ — and it is due to the increase in the rate of dollar deposits available value Thursday.

The rates for dollar-DM swaps also have to be interpreted likewise. It must be remembered, however, that the numbers expressing the quotations represent in this case 10,000ths of one DM, and that as the first of the two numbers is lower than the second the forward rate is obtainable by adding the same numbers to the spot rate.

Let us see now the significance of the quotations regarding the dollar-DM swap rate at one month forward, assuming an average spot rate equal to DM 3.9735 = 1 dollar.

By the quotation 36-41 the dealer means:

(1) at 36 I am prepared to sell, spot, dollars against DM at the rate of DM 3.9735 for 1 dollar, that is, to deliver, for instance, 100,000 dollars against 397,350 DM, and to repurchase them at one month date at the rate of DM 3.9771 for 1 dollar, namely, to take back the 100,000 dollars against 397,710 DM, disbursing a premium of 360 DM equal to 1.09 per cent p.a.;

(2) at 41, on the contrary, I am prepared to buy, spot, dollars against DM at the rate of DM 3.9735 for 1 dollar, that is, to receive 100,000 dollars against 397,350 DM, and to resell them at one month date at the rate of DM 3.9776 for 1 dollar, namely, to deliver the 100,000 dollars against 397,760 DM, earning a premium of 410 DM equal to 1.23 per cent p.a.

The average difference between the return rates of the two currencies on Monday is estimated at 1.16 per cent in favour of the DM $\left(\frac{1.09\% + 1.23\%}{2}\right)$

The same calculations can be made for the quotation 34-39 regarding the dollar-DM swap at one month forward indicated for Tuesday.

Naturally, also in this case the premiums that the dealer is prepared to offer or receive in the respective transactions would be different from those calculated for Monday (1.03 per cent instead of 1.09 per cent and 1.17 per cent instead of 1.23 per cent).

On Tuesday the difference in favour of the DM is smaller — on the average 1.10% $\left(\frac{1.03\% + 1.17\%}{2}\right)$ and also in this case it is due only to the higher return for dollars available value Thursday.

Obviously, also the dollar-lira swaps have to be interpreted in a similar manner. Although sufficient exemplifications have already been given, we shall all the same examine the significance of one of the lira-dollar swap quotations, if only for the fact that the relative figures bear an opposite sign.

Let us see, in short, the significance of the quotation —10 + 10 indicated for the dollar-lira swap at one month forward on Monday.

By such quotations the dealer means:

(1) at —10 I am prepared to sell, spot, dollars against lire at the rate of lire 624.80 and to buy them back at one month forward at the rate of 624.70 (624.80 plus —0.10), that is, with a premium in my favour of 10 centesimi of a lira for each dollar, corresponding to 0.19 per cent;

(2) at +10 I am prepared to buy, spot, dollars against lire at the rate of lire 624.80 for 1 dollar, and to resell them at one month forward at the rate of 624.90 (624.80 plus 0.10), that is, with a premium, also in my favour, equal to 0.19 per cent.

In this example the rates of return of the two currencies (dollar and lira), value Wednesday, are about equal; the dealer, however, wants to earn a profit irrespective of whether he is a buyer or a seller of spot dollars, in order to make both swap operations profitable.

On the contrary, by the quotation —20 par indicated for Tuesday, the dealer who sells spot dollars against lire to buy them back at one month forward requires a premium in his favour larger than that of Monday (0.38% instead of 0.19%); the dealer who, always against lire, buys spot dollars to sell them at one month date, does not require any premium.

The high rate of return for dollars, value Thursday, affects also the trend of spot transactions. Such operations, however, involve the risk of exchange fluctuations (in this case we are not referring to those which might be caused by changes in the par value of the currencies employed in the transactions but to the more common market fluctuations determined by factors related to other currencies).

Let us suppose in fact that on a Monday a European bank purchases dollars against Swiss francs at the rate of 4.3195. The bank has purchased dollars, value Thursday, which it deposits for one day at 18 per cent and realises a net profit of 11.50 per cent, taking into account that the Swiss francs used to purchase the dollars had not been invested.

On Wednesday the bank has to restore its position and therefore to purchase Swiss francs against dollars value Friday. If the rate of exchange is higher than 4.3195 the bank will have earned a two-fold profit: from the investment of dollars instead of Swiss francs, and from the more advantageous rate of exchange.

If, on the contrary, the rate is below 4.3195, the bank will have earned a profit only as long as the loss on the exchange does not exceed the 11.50 per cent earned on the dollar deposit; in this case, as long as the rate of exchange does not fall below 4.3182.

These operations are often carried out by both national and foreign banks against Italian lire in view of this currency's minimum fluctuations and, therefore, of the limited exchange risks that are run in restoring positions.

The lira-dollar rates on Tuesday, November 15 and on Wednesday, November 16, 1966 were 624.83 and 624.70 respectively. Banks that had bought dollars on Tuesday for use from Thursday to Friday at 18 per cent in order to restore their lire position on Wednesday would have suffered an exchange loss equal to $\frac{13}{100}$ of 1 lira, corresponding to 7.60 per cent p.a.

Nevertheless, they would have earned a substantial profit, as shown by the following table:

Return from dollar utilization	18.00%
Non-investment-of-lire loss	— 6.00%
Exchange loss	— 7.60%
	Net profit + 4.40%

Although the spot rates of other currencies do not reveal regularly similar results, the higher real value of the dollar, value Thursday, for spot transactions is clearly shown by the trend of day by day rates. Such short-term operations are usually resorted to for

the utilization of currencies in hand against other currencies which are needed.

Generally speaking they are swaps for very short periods and therefore the spot sale is tied to a forward purchase that may vary between one day, as in the above mentioned operation, and seven days at most. Value dates, in these transactions, are those indicated by the swaps themselves.

Some practical exemplifications follow, though it must be emphasized that the rates indicated are only a part of those applied in the period under review (November 1966), it being obvious that market rates were subject, during the course of a single day, to normal fluctuations caused by demand and supply.

DAY BY DAY

	Wednesday-Thursday		Thursday-Friday	
	Lira/\$	-1	+1	20
Pound/\$	1	1/2	7	8

Bearing in mind the foregoing concepts and assuming a rate of exchange of lire 624.80=1 dollar and \$2.8016=1 pound, the preceding quotations could be substituted by the following:

	Wednesday-Thursday		Thursday-Friday	
	Lira/\$	624.79	624.81	624.60
Pound/\$	2.8015	2.8015 1/2	2.8023	2.8024

Looking at the pound-dollar rates we can immediately realise that, while in the day by day quotation for Wednesday-Thursday it is the pound that is at a premium over the dollar (the premium is for the dealer who sells pounds against dollars on Wednesday and repurchases them against dollars on Thursday), in the Thursday-Friday quotation it is the dollar that is at a premium over the pound (the premium is for the dealer who sells dollars against pounds on Thursday and repurchases them against pounds on Friday).

Such quotations, in fact, merely represent the difference between the day-to-day deposit rates of the two currencies. In the first case, the dealer who sells pounds from Wednesday to Thursday deprives himself of a currency that could be utilized for that day at 7 per cent and receives dollars that could be employed at 6.25 per cent. Consequently, the bank that sells £1 at \$2.8016 on Wednesday and buys it back on Thursday against \$2.8015 will earn a premium equal to one 10,000th of 1 dollar, corresponding to 1.20 per cent p.a.; on the contrary, the bank that buys £1 at \$2.8016 and resells it at \$2.8015½ will disburse a premium equal to $\frac{1/2}{10,000}$ of 1 dollar, corresponding to 0.64 per cent.

In the second case, namely, the day by day quotation from Thursday to Friday, the situation is quite the reverse: the bank that sells dollars gives a currency which, if utilized from Thursday to Friday, would yield a return of about 18 per cent, while the pound yields the same return as on the previous day, that is, 7 per cent.

The bank that sells £1 at \$2.8016 on Thursday and repurchases it on Friday has therefore to disburse \$2.8023, paying, that is, a premium equal to $\frac{7}{10,000}$ of 1 dollar, corresponding to 9 per cent; on the contrary, the bank that buys £1, disbursing \$2.8016, and resells it at \$2.8024 will earn a premium of $\frac{8}{10,000}$ of 1 dollar, corresponding to 10.36 per cent.

With regard to day by day lira-dollar quotations, we shall confine ourselves to a close examination only of the rate for the period Thursday-Friday, illustrating its significance by using, in this case, the same scheme adopted for the swaps at one month forward.

By the quotation 20-16 the dealer means:

(1) at 20 I am willing to sell dollars against lire, value Thursday, at the rate of lire 624.80 = 1 dollar, and to repurchase them, value Friday, at the rate of lire 624.60 (624.80 - 0.20). In this case the dealer would earn for one day a profit of $\frac{20}{100}$ of 1 lira for each dollar traded, corresponding to 11.52 per cent p.a.;

(2) at 16 I am willing to buy dollars against lire, value Thursday, at the rate of lire 624.80 and to resell them, value Friday, at

the rate of lire 624.64 (624.80 - 0.16). In this case the dealer should pay a premium equal to $\frac{16}{100}$ of 1 lira for each dollar traded, corresponding to 9.20 per cent p.a.

The foregoing exemplification demonstrates that the return rate for the dollar from Thursday to Friday exceeds, on the average, by more than 10 per cent p.a., that of the lira for the same period, while the day by day quotation for Wednesday-Thursday reflects an approximate parity between the yield rates of the two currencies from Wednesday to Thursday.

The same results could obviously be observed in the day by day quotation of the dollar in respect to the other currencies during the same periods.

It remains only to be said that the dealers operating on the international market may have their customers in any country but, in the end, the cycle has always to be closed with a U.S.A. bank.

Let us see now how the conclusive part of the operation is carried out and why the dollar rate is higher from Thursday to Friday.

Let us suppose that a European bank (or a U.S.A. bank's branch located in Europe) invests dollars in the United States from Thursday to Friday.

The operation takes place through the following steps:

(a) Tuesday-Wednesday: the European bank deposits with the U.S.A. bank (A) dollars for a one-day loan (from Thursday to Friday) and earns an interest equal to 18 per cent;

(b) Thursday: the U.S.A. bank (A) receives the dollars in the form of a cheque issued by the U.S.A. bank (B) which is the correspondent of the European bank that has ordered the payment; bank (A) delivers the cheque to the clearing house;

(c) Friday: the dollars of the cheque have meanwhile been turned into Federal funds and credited to the reserve account of bank (A); the latter pays back the borrowed dollars, delivering to bank (B) a common bank cheque (that on Monday will be cleared with Federal funds); bank (B) credits the European bank's account, value Friday

(d) Monday: the cheque delivered by bank (A) to bank (B) is cleared with Federal funds and is, consequently, charged to the account kept by bank (A) with the Federal bank (obviously, the

European bank has, meanwhile, utilized the dollars value Friday and the cheque delivered to bank (B) will be annulled by another bank's cheque.

From the above it can be seen that bank (A) will have had at its disposal Federal funds for three days, from Friday to Sunday. In what way will this bank have utilized them?:

(i) if bank (A) needs them to adjust the weekly average of its reserves, it can keep them for three days in its account with the Federal bank, avoiding in this way the purchase of an equivalent amount of dollars on the Federal funds market. This means that it would gain the difference between the Federal funds rates for three days, at present approximately 19 per cent (6.30 per cent a day), and the 18 per cent that is the rate paid to the European bank;

(ii) if bank (A) reserves are in order on Friday, it can lend these funds to another U.S.A. bank needing them, at a rate of 19 per cent, earning also in this case 1 per cent.

Obviously, similar results could also be obtained if the deposit, from Thursday to Friday, was made with the same U.S.A. bank that was holding the European bank's dollar funds. This is due to the fact that through such a deposit the U.S.A. bank avoids having to deliver on Thursday to another U.S.A. bank, on behalf of the European bank, a cheque for the amount borrowed which, after presentation to the clearing house, would reduce its reserves by the same amount on the following day, i.e. on Friday.

From the foregoing exemplification it is clear that the present rate of 18 per cent for dollar deposits from Thursday to Friday is originated by the fact that on the Federal funds market the current rates for Friday exceed 6 per cent daily and reach 19 per cent in all, since Federal funds (value Friday) are calculated for three days for the purpose of computing reserves.

It is therefore evident that if in the U.S.A. the rate for these funds, owing to an excess of banking liquidity or, naturally, to a reduction in the Bank rate, should drop below the one applied today, the rate for dollar deposits from Thursday to Friday would also decline proportionally.

Finally, it remains to be added that the phenomenon in question might occur even for dollars value Wednesday, if in the U.S.A. Friday happened to be a holiday. In this case the rate for deposits from Wednesday to Thursday would be approximately 23 per cent

owing to the fact that Federal funds would be calculated for four days (i.e. from Thursday to Sunday) instead of three days in the computation of reserves. For the same reasons the rate for dollar deposits from Thursday to Friday would be about 23 per cent if in the U.S.A. the following Monday were a holiday.

In such cases it is obvious that the higher rate that would be applied for the dollar deposits during the period concerned would have a still more marked influence on the rate for dollar deposits for the periods previously considered, as well as on the spot and forward quotations of the dollar against any other currency.

To conclude the present article, it seems opportune to say something about London gold prices at the daily fixing, which quite recently have shown a weekly pattern in apparent contradiction to what has been said above. Within the week gold prices, in terms of dollars, rise daily to reach a peak on Thursday (1).

This characteristic, however, is yet another consequence of the same phenomenon we have just considered. It is due in fact to an interesting form of arbitrage between gold and Euro-dollars. As in the London gold market too, payments are actually made two working days later, dealers on Mondays and Tuesday usually sell gold to customers against dollars for immediate delivery and lend the relative amounts in the Euro-dollar market. Then on Wednesdays and Thursdays they buy gold at the fixing, thus causing a rise in prices. However, the dealers can afford to bear the higher rates, at least as long as there is a final margin of profitability, inasmuch as they are required to pay only on the following Friday and Monday respectively, and in this way they are able to take advantage, in both cases, of the high return obtainable from the dollars available value Thursday.

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(1) This development is referred to in the *Quarterly Review*, Autumn 1966, p. 21, Moscow Narodny Bank Ltd., London.