# The measurement of liquidity[1]

*Paper issued by the Bank of England on 20 July 1982.*

## Introduction

**1** In a paper *The liquidity of banks* published in March 1981, the Bank set out the main principles of its intended approach to the prudential supervision of banks' liquidity. A further paper, entitled *The measurement of liquidity*, was circulated as a consultative document in the summer of 1981. That paper developed the principles of the earlier paper and proposed a common framework for measuring the liquidity of banks based on the expected cash flows arising from their assets and liabilities. The present final version is intended to provide the basis for assessing the adequacy of liquidity of all deposit-taking companies for the purposes of the Bank's continuing supervision under the Banking Act.

## Objectives

**2** Banks must be capable of meeting their obligations when they fall due. Such obligations mainly comprise deposits at sight or short notice, term deposits and commitments to lend, including unutilised overdraft facilities. The mix of these obligations and their incidence in any period of time will vary between different banks but the maintenance of an assured capacity to meet them is an essential principle of banking which is common to all. This capacity may be provided in the following ways:

(i) by holding sufficient immediately available cash or liquefiable assets, subject to the qualification that marketable assets vary in quality in terms of the prices at which they are capable of being sold;

(ii) by securing an appropriately matching future profile of cash flows from maturing assets, subject to the qualification that there may be shortfalls in practice if borrowers are unable to repay;

(iii) by maintaining an adequately diversified deposit base in terms both of maturities and range of counterparties (bank and non-bank) which, depending importantly on the individual bank's standing in the market and on the general liquidity situation in the system at the time, may provide the ability to raise fresh deposits without undue cost.

**3** The Bank's supervisory objective is to ensure that banks' management policies apply a prudent mix of these different forms of liquidity appropriate to the circumstances of the bank and that these policies are sustained at all times. The Bank regards a prudent mix as one which offers security of access to liquidity without undue exposure to suddenly rising costs from liquefying assets or bidding for deposits.

**4** The responsibility for ensuring the liquidity of a bank rests with its own management. The Bank does not seek to impose across-the-board liquidity ratio norms, just as it does not seek across-the-board capital adequacy ratio norms, and thereby to supplant the exercise of judgment by bank managements. Instead, in determining what is a prudent policy for a bank, the Bank will take full account of its particular characteristics and situation within the banking system. As part of its regular discussions with senior management, the Bank will require to be fully satisfied that banks have both prudent policies and adequate management systems to ensure that the policies are followed; and it will continue to monitor banks' liquidity management during the normal course of its supervision. The Bank will wish to examine the extent to which potentially immediate obligations (deposits at sight and short notice and commitments to lend) should be supported by cash and immediately maturing or liquefiable assets and their appropriate quality; and the extent to which banks have planned ahead to meet the maturing of deposits with fixed maturity dates.

**5** With these principles in mind, this paper establishes a framework for measuring liquidity applicable to banks generally, that will serve as a first step towards a qualitative assessment of the adequacy of the liquidity of individual banks taking account of their particular circumstances.

**6** Measures of liquidity which have been employed hitherto have generally involved a comparison of deposit liabilities (in part or in total) with the available stock of certain assets classed as 'liquid'. This approach has the virtue of simplicity but does not take account of the development of liability or asset management techniques for controlling liquidity through cash flows. It also involves an over-sharp distinction between 'liquid' assets and other assets, many of which will be capable of generating cash in particular circumstances.

**7** In measuring liquidity a distinction has often been made between the position in sterling-denominated business and that in other currencies, although the positions in different foreign currencies have not normally been separately identified. Such distinctions may be appropriate because of the particular circumstances of a bank or its internal management policies. When this is the case, the Bank would expect to take account of these same divisions as a basis for its own monitoring. The Bank, however, also wishes to assess the liquidity of a bank's total business, undifferentiated as to currency denomination, since in principle, through the foreign exchange markets,

(1) In this paper the word 'bank' is to be read to include institutions licensed to take deposits under the Banking Act 1979.

obligations in one currency may be met by the availability of liquid funds in another.

## The basis of measurement

**8** The measure described below is based on a cash flow approach, normally taking liabilities and assets in all currencies together, although it can also be applied to liabilities and assets in one or a group of currencies. In this approach, liabilities and assets are inserted in a 'maturity ladder', with the net positions in each time period being accumulated. In the first maturity bands on the ladder this measure, by comparing sight and near sight liabilities with cash and assets capable of generating cash immediately, is similar to a customary liquid assets ratio. Marketable assets are placed at the start of the maturity ladder, rather than according to their maturity date, but account needs to be taken of limitations on their marketability and their susceptibility to price fluctuations. Commitments are recognised by being included as liabilities or as agreed in specific cases. The measure is thus a series of accumulating net mismatch positions in successive time bands. This will provide the framework for discussion with individual banks about their policies for managing liquidity and for establishing and subsequently monitoring the particular guidelines of liquidity adequacy that come to be agreed.

**9** The measurement incorporates the following particular features:

*(a) Liabilities*

(i) Deposits of all types are included according to earliest maturity.(1) The volatility of deposits, particularly call or notice deposits taken in aggregate, may in practice tend to be more closely related to a bank's creditworthiness as perceived by depositors and to its position in the system or to current economic or financial conditions rather than to the precise terms of the deposits. It is recognised that for some banks distinctions can be drawn between different types of deposit, for example, between retail and wholesale deposits. This stability and diversification of the deposit base will be taken into account in discussion of appropriate guidelines.

(ii) Known firm commitments to make funds available on a particular date are included in the appropriate time band at their full value.

(iii) Commitments which are not due to be met on a particular date, for example, undrawn overdraft and other facilities, are unlikely to have to be met in full and cannot be treated precisely. The extent to which undrawn facilities should be included as a liability will vary with their nature. This imprecision will be reflected by the inclusion of only a proportion of outstanding commitments in the first maturity band, the remainder being excluded. The appropriate proportion for each bank will be determined having regard to its past and prospective draw-down experience.

(iv) Contingent liabilities are not included in the measurement, unless there is a reasonable likelihood that the conditions necessary to trigger them might be fulfilled.

*(b) Assets*

(i) Assets are measured by reference to their maturity, unless, as in the case of overdrafts, they are repayable on demand in practice only nominally, or unless they are marketable, or are known to be of doubtful value.

(ii) Lending repayable on demand only nominally may yield some regular cash flow but this cannot be measured at all precisely. The Bank will wish to agree appropriate treatment with each bank. Possibilities which might be appropriate to normal circumstances would be to treat some proportion of the total as generating an immediate cash flow or to treat it as repayable in instalments over a period.

(iii) The treatment of marketable assets takes account of the extent to which they can be sold for cash quickly (or used as security for borrowing), incurring little or no cost penalty; and of any credit or investment risks which may make their potential value less predictable. It is important that the market for the asset should be sufficiently deep to ensure a stable demand for it. An important factor in this is the willingness of the central bank to use the asset in its normal market operations. These considerations are recognised in the measurement by applying varying discounts normally against the market value of marketable assets, all of which, as indicated earlier, are included at the start of the maturity ladder. Discounts for the majority of sterling assets are set out in Annex 1 to this paper. Similar discounts will obtain on comparable foreign currency assets. Assets not covered in Annex 1 will be a matter for agreement, on a common basis, arising out of discussions with individual banks.

(iv) Assets known to be of doubtful value are excluded from the measurement, or treated on a case-by-case basis.

(v) Contractual standby facilities made available to the bank by other banks provide support which should be recognised, and they are therefore included as equivalent to a sight asset. Due regard, however, will be paid to their remaining term and the possibility that they may not be renewed. Standby facilities provided by a bank to other banks are treated in the same way as commitments to lend at some uncertain future date.

*(c) Other items*

(i) Where items in course of transmission or collection are material, credits in course of transmission are deducted from debits in course of collection and the balance added to assets at the start of the maturity ladder.

(1) It may, however, be appropriate for certain special categories of deposit, for example, those where it is agreed that set-off should apply, to be netted off against specific assets and excluded from the calculation. The Bank would expect to agree such treatment with individual banks.

(ii) Items in suspense are normally treated on a gross basis.

**10** How far into the future it is desirable to measure liquidity profiles depends very much on the circumstances of each bank. The point of maximum excess of liabilities over assets normally occurs within the first six months, although it can be later, and it is therefore proposed that the profile should be measured up to twelve months. The Bank recognises, however, that in analysis and discussion it may be appropriate to concentrate more on the earlier maturities.

**11** As a separate matter, the Bank will also wish to continue to monitor the overall maturity transformation undertaken: for the further ahead a bank's assets mature, the more difficult it is to estimate confidently the credit and other risks which will attach to them until they mature, or to forecast the circumstances in which the bank will then be trading.

**12** The system of measurement is illustrated in Annex 2.

## Application

**13** The Bank's aim is to relate its measurement to the realities of the circumstances of each bank, and to achieve this discussions with each bank are needed. For example, the proper treatment of parental responsibilities for the liquidity of affiliates (ie subsidiaries and participations) needs to be considered. If these operate mainly in the United Kingdom, it may be right to seek additional information from individual banks in order to monitor on a consolidated basis. This may be less appropriate if the affiliates (or indeed branches) operate abroad for, even if the UK parent bank has ultimate responsibility, local conditions and regulatory requirements may mean that the liquidity needs of the parent and the operation abroad are so different that consolidation of the two would be unhelpful. In these cases, the Bank needs to satisfy its prudential objectives in some other way: for example, by examination of the internal arrangements of the parent bank for monitoring and controlling its worldwide liquidity needs.

**14** Hitherto, the Bank has not closely monitored the overall liquidity of UK branches of foreign banks, although it has taken steps to ascertain that this is done by the head offices of these banks. The Bank will wish to do so more actively in future, taking account of the relationship between the branch and its head office, and will have particular regard to the position in sterling.

## Statistical returns

**15** In principle, the measurement takes in all assets and liabilities and not just those at present analysed in the two principal maturity analyses (Q6 and S5) completed by many banks. Thus, liabilities should include any significant non-deposit liabilities which mature within the time span of the measurement: for example, tax liabilities. Similarly, assets should include non-financial assets which are marketable within the time span of the measurement. The present returns, however, provide a sufficient basis for the proposed measurement for the time being. But some modification and extension of the present maturity analyses will be sought using the normal procedures in order to implement the proposed measurement in full.

## Annex 1
## Discounts applied to sterling assets

| | |
|---|---|
| **Nil discount** | Treasury, eligible local authority and eligible bank bills. Government and government-guaranteed marketable securities with less than twelve months remaining term to maturity. |
| **5% discount** | Other bills and certificates of deposit with less than six months remaining term to maturity. Other government, government-guaranteed and local authority marketable securities with less than five years remaining term to maturity or at variable rates. |
| **10% discount** | Other bills, certificates of deposit and FRNs with less than five years remaining term to maturity. Other government, government-guaranteed and local authority marketable debt with more than five years remaining term to maturity. |
| **Discount to be determined** | All other marketable assets. |

The categories of asset used in this annex approximate to those currently employed in UK statistical returns. Comparable foreign currency assets are to be included on a similar discounted basis.

## Annex 2
## The system of measurement

| | | Sight–8 days | 8 days–1 month | 1–3 months | 3–6 months | 6–12 months |
|---|---|---|---|---|---|---|
| | **Liabilities** | | | | | |
| | Deposits | | | | | |
| | Commitments | | | | | |
| *Less* | **Assets** | | | | | |
| | Marketable | | | | | |
| | Non-marketable | | | | | |
| | Standby facilities available | | | | | |
| = | **Net position** | | | | | |
| +/− | Carried forward | | | | | |
| = | **Net cumulative position** | | | | | |