The Structure of Money Markets

I

Money markets can be of many different kinds, though necessarily they must have some common elements. Defined most simply, a "money market" may be described as a centre in which financial institutions congregate for the purpose of dealing impersonally in monetary assets. This is admittedly a grossly over-simplified version of the variety of organisational forms which are found in the real world.

Nevertheless, it serves to emphasise three essential characteristics of such markets: (1) that the group of markets collectively described as a "money market" is concerned to deal in a particular type of asset, the chief characteristic of which is its relative liquidity - i.e., the readiness with which it can be converted into cash without the risk of substantial loss; (2) that such activities tend to be concentrated in some centre (or centres) which serves (or serve) a region or area. The width of such areas may vary considerably. Some "money markets" have become world financial centres, or at least international in their scope. The direct influence of others may be restricted to part only of a national economy (e.g., Chicago or San Francisco in the United States), though these may have links more or less strongly developed with other centres in the same economy (in the example quoted, with New York and through New York with the country as a whole). In one or two instances, there may be a situation which can best be described as a "condominium" - e.g., Sydney and Melbourne in Australia; Bombay and Calcutta in India. (3) On a very strict definition, the relationships that characterise the money market must be impersonal in character and competition will therefore be relatively "pure" - i.e., dealings between the parties concerned should not be governed or influenced wholly or in part by personal considerations, though in fact this is an ideal likely to be only rarely achieved in practice.

Perhaps the last condition can best be emphasised by offering a contrasting example. In a true money market, strictly defined, price differentials for assets of similar type and maturity will tend to be eliminated by the interplay of the conditions of supply and demand. Some differentials will no doubt continue to exist at any one point in time, because in a dynamic situation the system of prices will be caught moving towards whatever, under current conditions, is the "equilibrium" price. Nevertheless, such differentials as remain will not generally be of any great consequence. When credit relations become "personal", on the other hand, there may be favoured customers who are accorded special rates, because of the size and continuity of the business offered, or because the borrowing customer and his business are well and favourably known to the lender. Sometimes, a loan may be granted at low rates because of mere friendship between the two parties, but that is the ultimate extreme. Moreover, the reverse experience is also possible — high rates charged to borrowers, who offer small and occasional business and who may *not* be very well known to the lender.

Defined in a narrow sense, the term "money market" is therefore applied to that group of related markets, which deals in assets of relative liquidity — such as call money, Treasury bills or notes, bills of exchange (or other "commercial paper"), and (in a British context) short-dated Government bonds. In some centres, the term is applied very narrowly indeed, as in London, where the money market is regarded as deriving primarily from the market relationships between the discount houses and the commercial banks. Nevertheless, such an emphasis must not blind us to the fact that the term is not infrequently also applied in a wider and looser context. In its broader connotations, the term encompasses the whole complex of financial institutions, which in varying degrees act together to satisfy the monetary needs of a community and, sometimes, such institutions are scattered spatially over a wide area.

Whatever type of definition one attempts, money market structure shows a wide diversity of form and it would serve no useful purpose to impose a classification by categories. In this field, probably more than in any other, it is extremely difficult to find any precise lines of division between one "type" and another. Over recent years, it is true, economists have increasingly attempted to

draw a distinction between "developed" and "undeveloped" money markets, but the forms of organisation are so various that the line of demarcation becomes decidedly blurred. It is surely all a matter of degree. Yet some "standard of reference" there must be.

On many occasions, an attempt has been made to resolve this dilemma by employing as a standard of reference a model based on a market already considered to be "developed" or "mature". Over many years, the London money market has been so regarded. Latterly, an increasing amount of attention has been focussed (especially in "under-developed" areas) on United States arrangements centred on New York. There are no doubt historical reasons to explain this tendency to refer to experience elsewhere, but when attempts have been made to translate these models to an environment quite different from that in which the relevant model was evolved the results have not always been particularly happy. At the same time, the efficiency of the London institutions in particular in catering for the demands not merely of a complex industrial economy, but also for the needs of that much wider area, which has chosen — or (sometimes) been obliged — to use sterling as its basic currency has prompted an intensive study of its mechanism as a means of discovering just what a money market can be expected to do. While this in no way justifies the application of a similar model or blueprint to the rest of the world, there is, nevertheless, some purpose in using the example of a "mature" money market as a standard of reference. Environments may differ, but the essential characteristics, as distinct from the precise institutional forms, have a generality of possible application much wider than may at first be conceded.

Mature financial centres appear to be distinguished by the satisfaction of the following main sets of conditions: (1) there is in existence an integrated structure of markets and institutions, grouped about a central bank capable and willing to act as a true "lender of last resort"; (2) the commercial banks have come to employ their cash reserves more economically, this being evidenced *either* by the emergence of more or less *stable* behaviour patterns with regard to cash ratios, the necessary adjustments being effected by movements into and out of other (earning) liquid assets, *or* by the acceptance of *lower* cash ratios, in which case there is an obvious economy in the holding of cash (on occasion, there is evidence of both developments); (3) to the extent that the propor-

tion of deposits held in the form of bank cash has ceased to fluctuate significantly, other liquid assets have assumed the function of providing a cushion and, though the liquid assets ratio itself may remain highly variable, there is likely to be an increasing emphasis on the desirability of observing an effective *minimum;* and (4) there is a high degree of specialisation of function.

For a money market of some kind to exist not all of these conditions need be satisfied. The order of arrangement is deliberate. No money market could exist without satisfaction of the first condition, though in developing an appropriate degree of integration elements of (2), (3) and (4) are also likely to emerge. Determination of the extent to which these conditions are "significant", if not essential, is the main purpose of the present article.

II

Integration of structure has two aspects: (a) it may relate to the central money market itself; and (b) it may apply more generally to the overall structure of a country's financial institutions. Complete integration would presuppose both types of condition, but it is possible for one to exist without the other.

Thus, in the two main money market centres of India — Bombay and Calcutta — there is already a high degree of integration of institutions operating in the central markets, but there is not yet any overall integration in the system as a whole, where firmer links remain to be forged between the so-called "organised" sector and the indigenous lenders, such as the Multani and Mawari bankers (1).

A more or less reverse situation formerly obtained in Australia. There the banking system as such demonstrated a high degree of integration, based on a small number of trading banks, each with developed branch banking systems. What was rather slow to emerge was a central market concerned with dealings in short-dated paper. At the same time, it might well be argued that this situation

(1) The role of these indegenous institutions is discussed in my chapter "The Business of Banking in India" in R. S. Sayers (Editor): *Banking in the British Commonwealth* (Oxford, 1952), pp. 177-186 and pp. 201-216. On this point, reference might also be made to "The Indian Money Market", in *Banca Nazionale del Lavoro Quarterly Review*, No. 21, 1952.

would scarcely have persisted so long had the Australian monetary authorities not been so cautious in waiting upon a natural growth of appropriate institutions and techniques. In the result, a sizeable "unofficial" market was already in existence by the time the authorities finally agreed to accept responsibility and to provide lender of last resort facilities at the central bank.

An integrated structure is significant in that the influences operating in one market, or affecting one particular institution in a group, will tend under these conditions to be transmitted fairly readily to other related markets or institutions and consistency will be maintained in the relationships between the several prices for money and money substitutes.

In a central money market, in which money loans are made available in several forms and with a variety of maturities, it will be possible to speak of a truly integrated structure only if continuous relationships are maintained between the relevant markets. Each market will have its own price for the type of money or money substitute in which it deals. For integration to exist, there must be *links* between these several markets and their respective prices. If one price ceases to be consistent with other related prices, adjustments will tend to take place such that consistency is restored. Borrowers will move out of a market where prices are high in relation to other prices into other markets where prices are more attractive. Similar possibilities must exist for lenders, such that they can move their funds to markets offering them a relatively higher rate of return. In this way, funds will tend to "spill over" from one market into another.

Absolute equality of price need not be — and rarely would be — the final result, but when due account has been taken of considerations of liquidity and maturity (and the several markets' attitudes in such matters), the prices which obtain should be consistent. In order that funds might move in the required directions, channels of communication must run between the several markets. *This is a prior condition of effective integration.*

The necessary links will be provided by those institutions (e.g., banks and insurance companies) which habitually operate either as lenders or borrowers in more than one market. Within limits set either by self-imposed rules (themselves derived from experience) or by the requirements of the monetary authorities, these institutions will usually re-shuffle their portfolios from time

to time. They may do this in order to secure the sequence of maturities they desire, or as a means of maintaining their profits.

Nevertheless, it is unlikely that perfect shiftability will be possible and a number of "frictions" will ordinarily operate to impede the free movement of funds from one market to another. The costs of shifting may include brokerages and commissions, taxes and the costs of investigating the placement of funds. In addition, there are the subjective costs associated with the inconvenience and bother of frequent movements into and out of markets. Risk and uncertainty will also operate as a barrier to the free movement of funds. In particular, there is the risk of depreciation in capital values, which is likely to be highly influential in those cases where it is not intended to hold securities to maturity (2).

At the same time, frequency of operation will tend to bring its own economies and the deterrent effects of risk and uncertainty are also likely to be weakened as continuous experience of market conditions produces a more informed basis for expectations and for action prompted by them. Indeed, ignorance can operate as the biggest barrier of all. Thus, where practices vary considerably between markets (as between the "organised" and bazaar markets in India) and there is no common code of conduct, full integration is not possible. There must be mutual trust and an understanding of the relevant techniques and practices, if the risks of shifting are not to loom too large and virtually to forbid movement between dissimilar markets. The situation in India is a rather exceptional case, overlaid by a high degree of integration in the "organised" sector, but it serves to illustrate the general principle. Once there develops a continuous and significant movement of funds from one market to another, and from one sector to another, the forces making for integration cannot long be denied.

In considering the broader concept, viz., integration as applied to the overall structure of a country's financial institutions, it will

(2) This is not always as big a deterrent as one might suppose. For example, losses may be treated as a deduction for tax purposes in one year, the proceeds of the sale of the securities that occasioned the loss being reinvested in a similar issue at currently low prices. If these securities should rise in price, they may be sold during the following tax year at a profit, which may then be taxed as a capital gain at a lower rate. Hence, the character of relevant tax arrangements must be taken into account when "shifting" is being considered and the tax laws may not infrequently be a major influence in determining investment decisions.

be found that similar conditions must be satisfied. For a country's banking system to be integrated, it is implied that funds can be moved without difficulty from one institution to another and from one point in the economy to another. The opposite of an integrated system in this sense would be one in which there was a large number of institutions, whose standing and methods of doing business were so different that each tended to have its own special group of customers, the rates charged being such as might be agreed upon in bilateral deals, very largely in ignorance of what might be charged or offered elsewhere in the economy.

That is an extreme unlikely to be met with in precisely that form in any modern country. Improved communications and the forces of competition both operate to preclude the possibility. Nevertheless, approximations to it can be found (e.g., in what was formerly Indochina and in parts of India and Africa) where in the indigenous sectors such relations are not uncommon.

Complete integration of the domestic banking system will also be difficult to achieve where a country is served to a significant extent by banks owned abroad. In these circumstances, reserves will often be held outside the economy to be drawn on as required and, in the absence of specific measures invoked to limit freedom of action, such banks could remain largely independent of local controls and able to reduce to a minimum their relations with local institutions.

Formerly, this was a not unjust description of British exchange banks operating in Asian countries and of the so-called ex-patriate banks with business connections in Africa (3). Latterly, both these groups of banks have in a number of instances been obliged by local laws to hold specified proportions of their assets within the areas in which they trade. In addition, they have tended to become much less exclusive and have begun to establish closer relations with indigenous institutions. This has been very largely a consequence of assimilation of practice and outlook, with a breaking down of the barriers of ignorance on both sides. Only on that basis can continuing relations between foreign and domestic institutions be established and maintained.

(3) For a description of arrangements in African territories, see W. T. Newlyn and D. C. Rowan, *Money and Banking in British Colonial Africa* (Oxford, 1954), *passim*.

III

So far little has been said about the mechanical arrangements for effecting integration. A fundamental requirement is the free movement of money and of monetary assets, so that temporarily surplus funds can be absorbed at points in the system where — at current prices — there is a demand for them.

Thus, within a money market centre, there may be a call loan market to assist in ensuring the fullest possible employment of available cash. Leading examples of these arrangements are the call money markets of Bombay, Calcutta and Karachi. The commodity dealt in is not strictly " cash " as such but " near cash ". This is true both of call money markets and of the similar type of market in " federal funds " that exists in the United States based on New York (4) and which facilitates dealings in entitlements to balances with the Federal Reserve Banks. The funds dealt in are primarily the excess reserve balances of certain member banks of the Federal Reserve System which desire to make them temporarily available in the market. The demand comes mainly from other member banks that need to command such balances in order to adjust their reserve positions to accord with existing statutory requirements.

In most of these markets, a proportion of the resources dealt in is placed by brokers. In London, often quoted as the leading example of this type of activity, the intermediaries act as principals and the discount houses borrow from the banks at call in order to carry portfolios of bills and other short-dated securities. When money is called by one bank, it can usually be re-borrowed from another and a circulating fund is thereby kept in constant employment. Indeed, because of the compactness of this market, there is

(4) See Hobart C. Carr, " Federal Funds " in Federal Reserve Bank of New York, " The New York
Money Market Essays (March, 1952), pp. 13-16. See also R. S. Sayers, (Oxford, 1957);
Money Market through London Eyes " in *Central Banking after Bagehot* ", *The Banker*
J. S. G. Wilson, " America's Changing Banking Scene - The Money Market *its Origin and Develop-*
(London) June 1957, Parker B. Willis, *The Federal Funds Market,* of the Federal Reserve
ment (Federal Reserve Bank of Boston, 1957); and Board of Governors *System Committee*
System, *The Federal Funds Market - A Study by a Federal Reserve*
(Washington, 1959).

a higher degree of integration at the centre than exists anywhere else in the world and it is on these grounds that many in the City of London would argue that only a discount market of this type can constitute a true " money market ".

Not only is the market for call money concentrated in the hands of a few specialists, but the same houses that provide the arrangements for evening out the supply of cash as between the commercial banks also serve as retailers of bills of the required maturities, so that the banks can adjust their secondary reserves of short-dated paper as and when necessary. Further, it is usually the discount houses that effectively " make " the market for short-dated bonds and thus concentrate transactions in related types of monetary assets in such a way as to ensure the closest possible approximation to consistency in rates and yields.

Paris also has a discount market, though it is much smaller than that in London. Thus, the discount houses in Paris borrow from the banks and other institutions for the purpose of carrying a portfolio of *Bons du Trésor* and commercial paper, thereby assisting the banks to adjust their liquid assets positions in accordance with current requirements. But, except for the smallest houses, their role as an intermediary in facilitating the " open market " operations of the Bank of France is quantitatively more important. In Paris, much of the discount houses' business is based on *en pension* arrangements, whereby paper is bought under an agreement to re-sell. Furthermore, the discount houses themselves regularly sell *en pension* paper that they have purchased in this way, the transactions being reversed at the end of the *pension* (usually in two or three days at most). " Open market " operations are also formally effected in this way.

In the " federal funds " market in New York, the main supply of overnight funds derives from commercial banks with temporarily excess balances, entitlement to which they are prepared to sell, though Government security dealers may also acquire a title to " federal funds " in the course of their operations (e.g if a dealer sells Government securities to the Federal Reserve he will receive payment in " federal funds ") and these, too, may come on to the market. The bulk of the demand for " federal funds " comes from banks that require to buy them in order to build up the average of their reserves within the current reserve requirement period.

Many, but by no means all, of these transactions are consummated in New York through the agency of an intermediary. For example, a bank in need of funds may indicate its requirements to a dealer, which in one or two cases may be another bank. The latter may have funds of its own and be willing to sell, or it may know of some other bank that is anxious to place funds. Not only will the dealer be in a position to match borrowers and lenders, but he will also be informed on current movements in the rate. Generally speaking, intermediary activities concentrate on the brokering function, the most important of these brokers being a stock exchange firm, which merely brings buyers and sellers together and is in no way an active participant in the market. For this service, it does not generally charge a commission (5), though in consideration of these services it naturally hopes to attract additional stock exchange business to itself.

Nevertheless, not all banks resort to an intermediary in their "federal funds" operations and quite a number prefer to deal directly between themselves (there are also markets other than New York, some of which are relatively important - e.g. in San Francisco). Further, because technically these transactions are in the character of a loan and are therefore subject to legal limits (6), there may be times when the size of the required adjustment causes inconvenience. In these circumstances, it is becoming common for banks to resort to sale and repurchase agreements in respect of short-dated Government securities (or "buy-backs"), which closely resemble the French *en pension* arrangements. The same purpose is served and rates will be consistent with those that currently obtain for "federal funds".

IV

If there is to be complete integration, the possibility of monetary adjustment must also exist for the system as a whole, so that

(5) Some commercial banks do pay this firm a small commission, since they wish to avail themselves of its facilities, but feel that they have insufficient stock exchange business to offer them in compensation for their services as a broker in "federal funds".

(6) For example, subject to certain exceptions, a national bank may not lend to any one borrower more than 10 per cent of its unimpaired capital and surplus. Again, national banks are generally restricted in their aggregate *borrowings* to the amount of their capital stock.

funds can be moved from points in the economy where they are in surplus to those where — at current prices — there is a deficiency in supply. In a country which possesses a small group of banks doing similar types of business, each with a developed system of branches, funds can be transmitted easily both from one point to another within a particular branch network and, where necessary, between the institutions concerned. Yet the existence of developed branch systems is not an over-riding prerequisite of integration in this sense. A unit banking system can also demonstrate a high degree of integration, provided adequate arrangements exist for the movement of funds between widely separated points in the economy.

The bill brokers supplied such facilities in nineteenth century England, thereby enabling local banks either to supplement local resources by borrowing on bills or to lend locally surplus funds by buying bills drawn outside their town or district.

In the United States, correspondent relationships have enabled "unit banks" very largely to overcome the disadvantages of restricted branch banking, facilitating the flow of funds from one economic region to another to meet (for example) the demands of seasonal finance. In nineteenth century England, this type of solution ultimately proved too costly and the path of amalgamation and branch development offered a more appropriate means of integration. But in the United States, so it seems, the fear of monopoly has proved far stronger than the possibilities of cost reduction. At the same time, there can be little doubt that the "federal funds" market has greatly assisted in overcoming the disadvantages of a banking system in which branch development is considerably restricted. Its operations help to siphon funds out of sectors of the economy where otherwise they would have remained idle and to put them to work (say) in areas where seasonal demands for finance are at their height. Not only does this market help to correct any maldistribution of funds obtaining as between regions, but its existence may also materially assist in diffusing over a wider area than would otherwise have been possible the effects of open market operations. The latter influence the overall availability of funds at the centre. This is likely to be reflected directly in the "federal funds" market and, to the extent that they deal in "federal funds" in New York, banks throughout the country will quickly feel the impact of Federal Reserve operations.

In France, there are elements of both systems — some banks have a nationwide network of branches; there is also a grouping of regional and local banks headed by a leading Paris bank; finally, there is the large number of regional and local banks which for the most part depend on the services of correspondents. Similar "hybrids" exist in a number of other countries.

Whatever the form adopted, the greater degree of integration that is achieved will serve to make funds available to meet demands wherever they might arise. This is reflected in a tendency towards equality of rates for similar types of business even at widely separated points in the economy. Thus, for a similar type of advance, rates will be the same in London as in the North of England, Scotland or Wales. Even the rates paid by the building societies on shares and deposits, and charged on mortgage loans, which are sometimes quoted as an exception to this statement, tend to move with other rates, though on occasion there is admittedly something of a time-lag. Savings bank rates are, however, much more sticky.

In Australia, which has a branch banking system on the British model, interest rates do not vary (for essentially similar types of business) from East to West, or from North to South. In the United States, where branch systems are both less common and less extensive, interest rates do vary — sometimes quite markedly — but the basis of variation frequently seems to be more the size of borrowing than regional factor as such. Although it may seem to be significantly cheaper to borrow in New York City than in Southern and Western centres, in fact the differences are not considerable for the larger types of loans. Rates on small loans, however, do show some regional differences. Minor local differences occur in France, but even before the introduction of the present arrangements for centralised control, there was already a tendency towards uniformity. By way of contrast, rates in India have sometimes shown quite a wide spread, both as between different centres and in the respective sectors of the banking system. To a large extent, this has frequently been due to *dissimilarities* in the types of business undertaken, but it may also be associated with an imperfectly integrated banking structure.

V

Integration of structure in the senses described above is essential to the development of a money market of whatever kind. Associated with it and partly in consequence of it, there has also tended to emerge a more economical use of available cash resources. In some contexts, this has resulted in the development of more stable behaviour pattern with regard to the maintenance of cash ratios. In others, it has led to the acceptance of lower cash ratios. Occasionally, there have been elements of both. The more economical use of cash is without doubt an important by-product of a truly integrated banking structure. Nevertheless, full advantage is unlikely to be taken of opportunities to economise cash, unless there also exists a central bank that is capable and willing to act as a fully-fledged "lender of last resort".

Of themselves, the arrangements that lead to integration materially assist in economising cash and other liquid resources. This is true both of the growth of call loan and other related markets (such as the "federal funds" market in the United States) and of the wider application of branch banking or of correspondent relationships. When there exists some mechanism whereby the full employment of such liquid resources as are available can be assured, there is less necessity to hold reserves at high levels and banks can work to a finer margin. That is by no means the whole story, but it is an important part of it.

Another essential element is the knowledge that the banks can depend on the central bank as a true lender of last resort. In the final analysis, it is the existence of borrowing facilities at the central bank that makes it possible for them to accept standards of liquidity much lower than they might otherwise conceive to be adequate.

There are many countries where banking business is subject to quite marked seasonal fluctuations. The banks may accommodate this type of situation in one of three ways: (a) they can hold much higher cash ratios than would otherwise have been necessary and allow them to fluctuate in accordance with the demands of business; (b) they can hold *less* cash and place a *higher* proportion of their assets in securities that are readily marketable, so that they can easily adjust their cash position either by compressing or expanding

their holdings of liquid assets (other than cash), though resort to this technique may well oblige them from time to time to accept capital losses as a result of sales on a falling market; or (c) they can hold lower, and possibly stable, cash ratios and have recourse to the central bank against the lodgment of security on those occasions when the pressure of demand for loans and/or cash is heavy. Nevertheless, the commercial banks cannot expect to borrow freely from the central bank at all times, unless they are prepared to accept its authority and such discipline as the central bank may feel constrained to apply, e.g. by determining the price at which it will make accommodation available to borrowing banks, or by stipulating the composition of their asset structure.

In order to enforce its wishes, a central bank operating in a mature money market will usually intervene from time to time both to influence the amount of cash and other liquid assets available and the prices that apply to the securities dealt in. However, even where appropriate market arrangements exist, a central bank will only be able to undertake "open market operations" (a) if it is empowered to purchase and to hold the types of assets that are available in the markets; and (b) if it is adequately supplied at all times with assets that it can sell in these markets. Usually, central banks have been inhibited less by limitations on the types of securities that might be purchased — though such restrictions have sometimes existed — than by a *shortage* of "ammunition". Indeed, both in the United Kingdom and in the United States, prior to the development of the Treasury bill as a popular and convenient means of Government borrowing, an embarrassing dearth of saleable assets was a not infrequent experience.

Historically, governments have usually obliged quite handsomely in providing convenient instruments in adequate — and sometimes more than adequate — amounts. Even in the absence of an accommodating government, central banks have not always been powerless and, on occasion, they have themselves created appropriate instruments. Thus, the Central Bank of Argentina in the nineteen-thirties issued a security of its own for sale to commercial banks (7) and, more recently, the Central Bank of Ceylon decided to supplement Government issues by offering short-term paper specially created by itself, because its "own portfolio was very limited" (8). At the same time, let it be understood that a dearth of ammunition appropriate for the carrying out of open market operations, while it may prove greatly inconvenient to a central bank, by no means precludes disciplinary activity of a more direct kind (e.g., by requiring the maintenance of minimum cash reserve ratios or the holding of special deposits with the central bank). The existence of a strong, active central bank will serve to stimulate integration by fostering the growth of the right sort of environment, but the precise character of the discipline imposed can vary a great deal.

(7) See S. N. Sen, *Central Banking in Undeveloped Money Markets* (Calcutta, 1952), Appendix to Chapter 4, "The Argentine Experiment, 1935-1939" (pp. 76-84).

The more economical employment of cash — permitting the maintenance of either relatively stable or lower cash ratios — may be brought about in several ways, but an essential prerequisite is a strong central bank. In England, for example, it was the growth of the bill market, which made possible the achievement of relatively stable cash ratios, since this market provided an outlet for temporarily surplus cash that was invested by the discount houses in a relatively liquid security. It was not, however, until the discount market's own liquidity was in effect underwritten by the Bank of England's complete acceptance of its responsibilities as a lender of last resort that the joint stock banks could safely hold their cash ratios at what became a conventional minimum of approximately 10 per cent. After the abolition of "window dressing" in 1946, this was reduced to a more or less constant 8 per cent, which the authorities now expect the banks to observe. This has been associated with a minimum liquid assets ratio of about 30 per cent.

The policy in England of maintaining a more or less fixed cash ratio is something of a special case. In the large number of countries where commercial banks are required to maintain minimum cash reserves, these minima can usually be varied within specified limits. It is obviously less likely under these conditions that fixed cash ratios will obtain, but the technique does tend to impose a more standard type of behaviour than previously existed

(8) See Central Bank of Ceylon, *Annual Report of the Monetary Board to the Minister of Finance*, for the year 1955, p. 7. Two aspects of this experiment that were specifically noted in the Report were, first, the possibility of developing central bank paper as a security specially attractive to the non-banking private sector and, second, the need to expand the existing small security market of the country.

and to mould the commercial banks to a pattern. Only when excess reserves obstinately remain at high levels is large-scale non-conformity possible. Thus, in the United States, where the existence of excess reserves has on a number of occasions enabled the commercial banks to act somewhat independently of the authorities, more recent experience (for example, during 1955 and 1956) has demonstrated what can be done when the authorities are prepared to put on the pressure in the open market. Moreover, this pressure has on the whole been exerted successfully, despite the widely divergent practices of commercial banks in the United States with regard to secondary reserves (9).

In countries which neither apply a fixed cash ratio nor minimum reserve requirements, the general experience has been a tendency for cash ratios to fall. This has certainly been true of a number of European countries (10), where banks have become accustomed to work to much finer margins of cash than at one time was regarded as appropriate. In terms of the preceding discussion, it is argued that this, too, assists in providing conditions favourable to a greater degree of integration.

Much of the argument in this section has been concerned with the behaviour of the banks' cash reserve ratios, whereas the authors of the Radcliffe Committee's Report (11) would doubtless feel that emphasis should be placed on the " wider structure of liquidity in the economy " and most economists would surely agree with them. One of the chief means (12) of influencing this " wider structure of liquidity " is by controlling the liquidity of lending institutions that by contributing to the " ease with which money can be raised " influence the liquidity of the economy as a whole.

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(9) Not only does the proportion of total assets held in the form of Government securities vary greatly from one bank to another, but maturity distributions also demonstrate a wide scatter. Nor are these circumstances obviously related to size of bank or to the regional distribution of the institutions concerned. Nevertheless, whatever the habits of a particular bank in this respect, it will at some point be susceptible to market pressure and this is what seems to have happened.

(10) See E. Browaldh and L. E. Thunholm, *Changes in Bank Balance Sheets, 1938-1952*. Institut International d'Etudes Bancaires (Paris, 1954), p. 13.

(11) *Report of the Committee on the Working of the Monetary System*. Cmnd. 827, 1959.

(12) The other is by resorting to fiscal policy and it should be unnecessary to emphasise that maximum effects can only be achieved if the two are operated such that they complement each other.

Among these institutions, the banks hold a special position, because for most borrowers they are much the most convenient institutional source of short-term funds that is available (often the only source). Yet other institutions like hire purchase finance companies though they may not " create credit " also effectively stimulate the flow of monetary resources and their activities have similar effects. If, therefore, there is a case for controlling the liquidity of the banking system, it would seem desirable — and the present writer believes possible — to control the activities of these other financial institutions as well.

To the extent that liquidity means the " ease with which money can be raised ", it will obviously not be the cash ratio alone that is important, though the banks' need to hold some cash (e.g. for transactions purposes) and their desire to economise in the amounts so held, are both highly relevant factors in attempting to bring pressure to bear on bank lending activity by operating upon their liquid assets as a whole. It matters little whether this is done through the agency of debt management (as the Radcliffe Committee has recommended) or by more direct means. The same ends will be served.

Thus, by " managing " the National Debt, it is possible for the monetary authorities to induce movements in interest rates and, by this means, to bring about changes in liquidity. Provided the authorities avoid putting out an over-supply of short-term paper, holders of debt will have to consider from time to time the extent to which some of their longer-term securities remain liquid, in the sense that they can still be sold for cash without substantial loss. On those occasions when financial institutions are obliged to fall back on the cushion of their longer-dated securities for the purpose of obtaining the liquid resources necessary to support their lending programmes, they will become sensitive to any operations that affect the medium- and long-term parts of the rate structure. It is in this way that debt management can be used by the authorities to influence " the wider structure of liquidity ". The difficulties about this prescription are (a) the danger that the authorities may be led into " monetizing " a large part of the National Debt; and (b) that, although it may be relatively easy to increase general liquidity by pushing bond yields down, it will be much more difficult to decrease liquidity by forcing them up, since even at attractive prices the institutions may not want to buy the securities that are being offered

for sale. However, the degree of dependence on the technique of debt management may be reduced by resorting to a variety of supplementary measures.

The purpose of direct methods is to influence more rapidly the liquidity of lending institutions and thereby the liquidity of spenders. For example, if an effective minimum liquid assets ratio is in operation as in England, where the authorities now virtually insist on a minimum of 30 per cent (13), any increase in this ratio will subject the banks to immediate pressure. When the banks are " lent up " much the same effect will be achieved by a call for " special deposits " by the Bank of England.

On the assumption that the adjustment must be made more or less immediately (which virtually precludes a reduction in their advances), the banks must face the possibility of a capital loss if they sell bonds, and, though this may be reduced to some extent by tax rebates, it must have the effect of making the banks (and any other institutions to which such action might be applied) feel less liquid. It is the *possibility of loss* that makes the banks (or any similar institution) think twice about a further expansion of loans to the private sector. But the degree of possibility may conceivably vary. For example, if the banks carry in their investment portfolio a proportion of short-dated securities as a " secondary " cushion of liquid assets (14), they can almost certainly sell without material loss. Furthermore, the official broker will generally seek to avoid demoralising the gilt-edged market and this will preclude any sharp drop in " administered " prices (if the sale is at all large, the demand can only come from official quarters). Finally, if Government securities had to be sold at a loss in order to maintain the level of a bank's loans, presumably the relatively high earnings on advances would offer the banks some compensation.

Yet, whatever their qualms about the gilt-edged market, it remains open to the authorities to employ this technique and, should they choose to do so, their hand will be greatly strengthened where there exists an integrated complex of markets within which the relations between banks, money market houses, hire purchase finance companies, and (to some extent) insurance companies are close and

(13) See Radcliffe Commitee *Report*, paras. 352 and 429.

(14) In the United Kingdom, bank " investments " are not formally regarded as liquid assets.

more or less continuous and through the agency of which the effects of any such action will in due course be diffused throughout the economy.

VI

It is the common experience that " mature " money markets are characterised by much specialisation. There is nothing remarkable in that. It is merely a function of growth. Until the volume and continuity of transactions is such as to justify full-time concentration on a particular type of activity, there is no purpose in specialisation. But the specialist is bound to emerge as soon as a sufficient demand develops for his services.

Thus, private banking was at first merely a sideline of business in less liquid chattels. The early " bankers " were merchants, or goldsmiths, or sometimes manufacturers. Only when their banking business grew to such proportions as to make it impossible to combine conveniently these two sets of activities did the choice have to be made and the banker was obliged to become a specialist.

Within the banking field, too, there was scope for specialisation as soon as a sufficient demand for specific types of services became evident. For example, the need of the country banker in England of an investment outlet for his surplus funds led to the concentration of certain houses on bill-broking. They acted as intermediaries between those who wanted to borrow on bills and those who wished to invest in bills. In due course, these houses were to become dealers in bills and to carry a stock-in-trade as principals, financed to a large extent by funds borrowed from the banks. On this basis, the modern discount houses began to evolve, providing, in addition, a retail market in bills, which enabled the banks to obtain the particular maturities they required from time to time for the purpose of maintaining secondary reserves of a currently suitable maturity distribution. Latterly, they have also assisted in " making " the market for short-dated governments and, by concentrating maturing stocks and bonds into a few hands, have materially facilitated the conversion operations of the authorities.

Another example drawn from London relates to the merchant bankers, some of whom in a limited sense still act as merchants. One of their main functions now is financing the movement of goods. This they do by "accepting" a bill of exchange on behalf of a

client known or recommended to them, thereby facilitating its negotiation. In this way, the Accepting Houses have become specialists in marketing reputation and integrity, as well as experts in the relevant financial techniques.

New York is the only other money market in the world comparable with London in importance, but there the degree of specialisation is less marked. Money market institutions, including the banks, generally straddle several fields. Yet there is a certain amount of specialisation. Thus, dealings in Government securities may not be the exclusive activity of any single firm in the market, but there are nevertheless certain firms which concentrate more particularly on such dealings. Likewise, there is a small number of houses that could claim to be specialists in the placement of commercial paper, though again this is by no means their only nor, indeed, their main business. With the same qualifications, specialist expertise has been built up in handling bankers' acceptances and " federal funds ". The trend is there, though the specialisms may not yet have reached the maximum degree of intensity.

In Australia, the banking system itself has been " integrated " for many years, but the émergence of a money market that made use of specialist institutions came rather slowly. Formerly, the banks themselves tended to provide the entire range of services. The only long-standing specialisation was in the field of agricultural credit — even that was incomplete. Latterly, specialists made their appearance in the capital market and a number of companies were also established for the purpose of providing hire purchase facilities. Ultimately, too, facilities were devised by certain stock exchange firms in Sydney and Melbourne in order to meet the needs of clients, who wanted the security of Government paper, but whose funds were unlikely to be available long enough to justify an outright purchase. Moreover, Government securities with only a few months to run to maturity were not normally available in large amounts. To meet this situation, certain dealers offered " buy-back " facilities, whereby they sold securities to such investors subject to an agreement to re-purchase and, in this way, as well as by the normal borrowing of funds at short-term, were able to build up a sizeable portfolio.

Not until February 1959, however, by which time there already existed an " unofficial " market of appreciable size, did the central bank begin to provide lender of last resort facilities to " authorised dealers " in the short-term money market. The main objectives in providing facilities at this stage were (a) to contribute to the soundness of what was fast becoming a significant investment medium for holders of substantial amounts of short-term funds; and (b) to assist in the development of a wider and more active market for short-term Government securities, though these securities did not yet include Treasury bills issued by public tender. At the same time, the range of Government securities was widened to some extent when in November 1959 a series of special issues of 3 months Treasury notes was begun on a fortnightly basis for the purpose of absorbing the seasonally high liquid resources both of the banks and of the public. These notes were rediscountable at the central bank, though in respect of holdings of these securities dealers were subject to the same limits as were imposed by the central bank with respect to other money market assets.

In this way, specialist money market operators became established and recognized in Australia and there can be little doubt that putting the money market on an official basis has been fully justified. Already, additional dealers have been " authorised " by the central bank and the market is growing in size, with the dealers handling a substantial volume of transactions in money market securities, including the new seasonal Treasury notes. A distinct widening of the dealers' range of contacts has also been evident. This has had the effect of increasing the market's capacity to search out and absorb the liquid funds available in the economy, besides providing it with the flexibility necessary to accomodate changing conditions, including some experience of financial stringency.

India represents an interesting contrast. In Bombay and Calcutta, which are its two main money market centres, there have long been a number of specialist brokers active in placing money for short periods or in arranging the re-discount of *hundis* (an indigenous credit instrument rather like a promissory note). There is also the endorsing *shroff*. It is he who actually re-discounts the *hundis* with certain of the larger commercial banks and, in this way, provides such links as exist between the central money market and the indigenous sectors. These are essentially money market specialisms and their existence demonstrates a degree of " maturity "

and of sophistication that non-Indians may find surprising (15). Yet the Indian authorities did not in fact choose to build on this basis and their bill market scheme was more specifically concerned with the problem of how best to deal with the acute financial stringency that regularly develops each busy season (16).

The advantages of specialisation need little elaboration. With the accumulation and concentration of experience comes the development of expertise and it is this that provides the ultimate justification of specialisation of function. Nor must specialisation be confused with " compartmentalization ". The purpose of developing specialisms is not to build up separate kingdoms, but to construct bridges between the several parts of the money market. Arbitrage operations, for example, are more likely to achieve their effects in promoting consistent price relationships if they are carried out by experienced operators than if left in less expert hands. Specialisms need imply no tendency towards monopoly, nor isolation of parts of the money market. The specialist holds his place in virtue of his acquired skill and experience. He has no other claim to his position and may be forced from time to time to face new competition for his chosen type of business. The growth of specialisms should on the whole favour the development of fuller and more complete integration of the several markets that constitute the money market complex — by facilitating the flow of funds both between as well as within markets — and, indeed, if the specialist fails to perform this function, he serves little useful purpose.

VII

Finally, what are the implications of " maturity " in money market structure (as here defined) from the point of view of central bank control? First, where a money market is compact and integrated (as in the United Kingdom), the effects of any action taken by the authorities at the centre will percolate rapidly through the whole of the central money market and from there

(15) See J. S. G. Wilson, " The Business of Banking in India " in R. S. Sayers (Editor), *Banking in the British Commonwealth*, pp. 169-171 and pp. 206-208.

(16) See Reserve Bank of India, *Annual Reports* for 1952, pp. 17-18; 1953, pp. 16-17; 1954, pp. 15-16; 1955, pp. 19-20; 1956, p. 10; and 1957, p. 15.

will spread to the country at large. For this to be possible, there must be a market mechanism through the agency of which the authorities can operate and the centre must be linked more or less directly with the rest of the national economy either by means of a wide spread of bank branches, or of a developed correspondent system (or a combination of both).

Where, as in India, the central money markets are developed, but the links with the indigenous sectors are somewhat tenuous, the effects of operations in the central markets will only filter through slowly to the system at large. Alternatively, as was the case for many years in Australia, the banking system itself may be integrated, but no central money market mechanism may exist through which the authorities can operate effectively. In this case, relations between central bank and trading banks will tend to be direct and, whether by agreement or by compulsion, liquid assets ratios and interest rates will be determined, if they are determined at all, by direct communication between the central bank and the constituent members of the banking system.

This may also happen in a " mature " money market, either as a supplementary means of control or — where a cheap money policy has been followed and traditional weapons have been blunted — in substitution for action in the markets. Thus, if an appropriate market mechanism exists, the central bank has a choice of techniques and may intervene indirectly as the " hidden hand " or, at its discretion, apply the methods of direct action. In the absence of a true central money market — whether the banking system is integrated or not — *direct* action is the only practicable method and, in recent years, it has been employed increasingly to apply a measure of credit control to institutions which — given their local environments — would otherwise lie beyond the reach of their central banks.

Second, there is the question of the extent to which the commercial banks have developed attitudes with respect to holdings of cash and other liquid assets that renders them more amenable to effective central bank control. Where cash and other liquidity ratios are subject to fairly predictable behaviour patterns (whether these have been imposed by the authorities or not), it ensures that the commercial banks will be dependent on the central institution for their " marginal " requirements of cash (and, it may be, of other liquid assets also). It then becomes possible for the authorities to

evoke responsive action on the part of the commercial banks by exerting the minimum amount of pressure. At the same time, the central bank's willingness to act as lender of last resort is a prior condition of the commercial banks' readiness to observe such patterns of behaviour. Unless the banks are confident that assistance will be made available as necessary, they will fight hard to retain a degree of independence by keeping substantial reserves in liquid form.

Third, some specialisation of function, if a less essential requirement, also operates to the advantage of the central bank. Under these circumstances, pressure can be brought to bear easily and rapidly *at whatever point is considered to be most strategic in terms of current policy and in the knowledge that there will be repercussive effects in related markets.* Thus, where a specialised group of markets exists for short-dated paper of various kinds, it is possible for the central bank by purchase or sale to make cash more or less readily available in whatever sector of the money market it currently desires to influence directly, leaving market forces to spread the effects of any such action and to restore consistency in price relationships throughout the system as a whole.

The point of impact may well be as important a policy consideration as the degree of pressure to be applied (or withdrawn), since the consequential effects of such action will take a little time to work themselves out and may not immediately affect other markets to anything like the same extent. There may be occasions when it is desired to apply a differentiated pressure (particularly on rates) and the efficacy of such shock tactics will not be vitiated by subsequent adjustments elsewhere. The *primary* effect will have been achieved where it was most wanted. Over the course of time, there will undoubtedly be secondary effects, but these will be more diffused and the consequences therefore less direct. In this way, the existence of specialised markets can assist the central bank to take calculated and specific action to achieve objectives that might have been ill served by a general withdrawal from (or addition to) the cash base (e.g. by raising or lowering reserve requirements).

In addition, the central bank may exert its influence by conferring directly with the respective groups of interests. The leading example of this practice occurs in London, where the Governor of the Bank of England can at any time call in for informal discussion the respective chairmen of the Clearing Bankers' Association, the Accepting Houses Association, the Discount Houses Association, or the Issuing Houses Association. Similar arrangements existed in the United States during the period of Voluntary Credit Restraint, when consultations took place between the Federal Reserve System and appropriate specialist organisations. Other countries that have developed this technique include France and Holland, where regular consultations have taken place between the authorities and associations representing banking and financial interests.

Yet, in this matter, the absence of specialisation may not handicap a central bank too greatly, provided an integrated commercial banking structure already exists. Thus, in Australia, prior to the relatively recent emergence of specialised institutions, the banks were accustomed to undertake a wide range of different types of business. At the same time, because of their small number and the fact that their head offices (or in the case of the two Anglo-Australian banks, principal Australian offices) were mostly situated in one or other of the two main centres (Sydney and Melbourne), it was not a matter of great difficulty to establish contact and to provide for close and continuous consultation on a great variety of matters between central bank and trading banks. Furthermore, the Australian emphasis on branch banking facilitated the rapid transmission of the results of these deliberations to all parts of the economy.

Arrangements such as these are usually described as " moral suasion ", or " central bank leadership " and resort to it is greatly facilitated by the emergence of specialist groups of institutions. Many American and some British economists would argue the disadvantages of direct action (e.g., the difficulty of establishing standards on the basis of which to interfere with individual decisions), though this need not necessarily follow upon consultations with the central bank. Yet those of a more authoritarian turn of mind might argue that a central bank should be free to employ every available means of implementing its declared policy and, in consequence, they might well regard " moral suasion " as one of the most effective control techniques of all.

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