L. 5. 2. RFD. 187

Board of Governors of the Federal Reserve System

Division of International Finance

REVIEW OF FOREIGN DEVELOPMENTS

April 1, 1952

Commercial Bank Reserves and Reserve Requirements
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NOT FOR PUBLICATION

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April 1, 1952

COMMERCIAL BANK RESERVES AND RESERVE REQUIREMENTS

by

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COMMERCIAL BANK RESERVES AND RESERVE REQUIREMENTS

Introduction

This paper is a study of the reserves which commercial banks, for reasons of prudence or law, have to hold against their deposit liabilities. The study is especially concerned with the problems of underdeveloped countries, but, in order to provide a historical and comparative background, a considerable amount of space is devoted to the experiences of the more advanced countries, especially the United States.

The reasons banks need reserves in the absence of any statutory requirements, and the considerations which determine the amount of reserves needed, are discussed first. Then the effect which the need for holding reserves has on the credit potential of the banking system is explored.

This is followed by a brief explanation of the historical origin of statutory reserve requirements against bank deposits. Next, there is a discussion of the purpose which these requirements normally serve. Because the United States was the first country to have reserve requirements against deposits, and because the subsequent adoption of such requirements by a great many other countries has been based to a considerable extent on certain principles which underlay the requirements in the United States, the historical evolution of reserve requirements in this country is studied in some detail. Then there is a brief survey of reserve requirements in other countries, and of the main features which characterize the requirements of the individual countries.

After having completed the discussion of the characteristics of reserve requirements in the United States and other countries, a study is made of the effectiveness of flexible reserve requirements of the usual type as an instrument of credit regulation, and of the practical limitations on the use of this instrument.

The last three sections of the paper deal with three novel types of reserve requirements which have been devised for the purpose of overcoming some of the shortcomings of the usual type of requirement.

The need for reserves

The amount of cash which individual banks receive for deposit at any given moment may not necessarily be as large as the withdrawals of cash taking place at the same time. Moreover, at interbank clearings of checks, a bank may find that its claims on other banks are smaller than the claims of other banks on it. For both reasons, banks need a reserve of money which they can draw upon. This is true regardless of the existence of any legal reserve requirement.

Banks usually find it convenient to hold the bulk of their reserves in the form of deposits with the central bank, even in countries in which there are no legal requirements compelling them to do so. This is a safe and convenient form of maintaining reserves. For one thing, payments by one bank to another, as a result of debit balances at clearing, are customarily made by drawing checks against deposits with the central bank. If banks are near a central bank and have deposits with it, their need to hold reserves in the form of notes and coins in their own vaults is very small, because by drawing on the central bank they can quickly replace any cash withdrawn by their depositors.

From the standpoint of an individual bank, a demand deposit with another commercial bank in the same country may be regarded as part of its reserves, because it can obtain cash by drawing on the deposit in the same way that it can draw on its deposit with the central bank. From the standpoint of the banking system as a whole, however, deposits of one commercial bank with another do not increase the total volume of reserves. Viewing the banking system as a unit, the only deposits which represent reserves are those which can be withdrawn in cash by the depositing bank without reducing the reserves of some other bank in the system. In most countries, only deposits with the central bank meet this test.

Money which a bank holds as a reserve against its deposit liabilities cannot be lent out, and ordinarily earns no interest; accordingly, banks have an incentive to keep their reserves as low as is compatible with their minimum needs for liquidity. The extent to which a bank can safely reduce its reserves, in the absence of any statutory requirements, depends largely on three considerations:

(1) The bank's experience with respect to the amplitude and timing of fluctuations in withdrawals and deposits;

(2) The extent to which the bank holds gold and foreign exchange or other assets which can be sold at short notice with little risk of loss; and

(3) The extent to which the bank can count on borrowing funds from the central bank or other sources, such as correspondent banks, at any time.

The first of these three considerations, the degree of stability in the bank's deposits, depends on a number of institutional factors related to the nature of the business activities and the spending and saving patterns of the bank's customers. It also depends on the extent to which depositors are likely to subject the bank to senseless "runs".

The second consideration listed above is a very important one. In countries with broad and active markets in short-term private and public debt, banks can safely operate with low reserves if they keep a substantial "secondary reserve" in the form of short-term negotiable instruments which can be converted into cash within a few hours time with little risk of loss (unless too many sellers enter the market at one time, as happens during financial panics). In cases where the central bank or the Treasury is maintaining an orderly market in government securities, and where there is no reason to expect a change in this policy, a secondary reserve in government securities may be almost as liquid as a deposit with the central bank.

The financial markets of underdeveloped economies do not offer the same fine gradations of readily marketable assets of different maturities as are to be found in the large industrial countries. As a consequence, banks in the underdeveloped countries to a much greater extent must achieve liquidity through holding idle funds, or in some cases foreign exchange which can readily be converted into cash by sale to the central bank.

The third consideration determining the amount of reserves a bank needs is the possibility of borrowing money at very short notice. The existence of a central bank which can provide banks with liquidity through rediscount operations reduces the need of banks to hold large cash reserves; however, in many, and perhaps most, countries banks are expected to maintain sufficiently large reserves to obviate recourse to rediscounting except in rather special circumstances. Similarly, the amount of cash reserves a bank will need to hold will be smaller in situations in which the bank can depend on its ability to borrow from its correspondent or, in the case of a foreign branch, from its head office.

The effect of reserves on the credit potential of the banking system

The greater the amount of reserves which banks feel they need to hold in relation to their deposit liabilities, the smaller is the capacity of the banking system to expand credit. If banks need to hold reserves equal to, say, twenty per cent of their deposit liabilities, then the total amount of their deposit liabilities cannot exceed five times the amount of their reserves. When reserves fall below this percentage, banks must either obtain additional reserves or else contract credit. The commercial banking system as a whole can obtain additional reserves either by selling assets such as foreign exchange or government securities to the central bank, or by borrowing from the central bank.

An individual bank may acquire reserves at the expense of a loss of reserves by other banks, but this does not strengthen the reserve position of the banking system as a whole. It also does not affect the credit potential of the system unless there is a difference in the relative reserve needs of the banks concerned, because the increase in the credit potential of the banks acquiring reserves is offset by the contraction of the credit potential of the banks losing reserves.

The credit potential of a banking system does not depend solely on the relationship of reserves to deposits. It also depends on the extent to which an expansion of credit on the basis of excess reserves sets in motion forces which will drain reserves out of the banking system. There are two principal kinds of drain which occur as banks expand credit. First, there is an increased demand by the public for notes and coins, and, second, there is an increased demand for foreign exchange. The first is usually referred to as the "internal" or "domestic" drain; the second is called the "external" or "foreign" drain.

For the banking system as a whole, the internal drain, or the increased demand for cash as the volume of credit is expanded, will be determined in large measure by the institutional factor of the extent to which cash, rather than checking deposits, is used in making payments.

The more highly developed the economic and financial system of a nation, the greater is the use of checks rather than cash. In the industrialized countries, the processes of production and distribution are divided into many successive steps which call for payments by one firm to another. The use of checks provides business enterprises with a convenient and safe way of making and receiving such payments. In the underdeveloped countries, on the other hand, the processes of production and distribution involve fewer inter-business and inter-urban payments, and as a consequence a smaller percentage of the total of all payments and receipts are of the types which can best be made by the use of checks. Moreover, because of the higher levels of per capita income in the developed countries, a larger percentage of the total expenditures of consumers involves sums which make the use of checks highly desirable from the standpoint of both the buyer and the seller. Largely for these reasons, and for the other elements which follow from it, such as the lack of banking services in many communities, a much larger part of the money supply in the underdeveloped countries takes the form of notes and coins than it does in the developed countries.

The relatively greater use of cash in the underdeveloped countries acts as a sharp brake on bank credit creation. This factor is occasionally overlooked, or is insufficiently stressed, in discussions of the ability of banking systems to create money. As banks in underdeveloped countries expand credit, the increased volume of payments involves a substantial withdrawal of currency from the banks. As each bank finds its cash reserves disappearing, its ability to extend further credit is reduced, regardless of any legal reserve requirements. Accordingly, because of the large outflow of currency which follows any expansion of credit, the banking systems of these countries cannot increase their earning assets or the money supply by so large a margin as one might expect. For example, in a country in which increases in the money supply tend to be distributed 40 per cent in the form of demand deposits and 60 per cent in the form of currency in circulation, the maintenance of a minimum reserve ratio of 20 per cent would not enable the banking system to expand credit up to five times the amount of any excess reserves. In fact, it could create only $1470 of credit for every $1000 of excess reserves.[1/]

1/ The maximum potential increase in bank credit, deposits, and cash in circulation, on the basis of a given amount of excess reserves of the commercial banking system, can be determined as follows:

Let ΔD = potential increase in deposits
ΔC = potential increase in cash in circulation
ΔL = potential increase in bank credit
r = commercial bank reserve ratio
R = amount of excess reserves of the commercial banking system

Then $\Delta D + \Delta C = \Delta L$; and bank credit expansion reaches its limit when $\Delta D \cdot r + \Delta C = R$. (continued at bottom of next page)

There is still another factor which operates to check bank credit expansion. This is the so-called "external drain". Because of the limited variety of goods which can be produced in an underdeveloped country, an increase in income generated by bank credit generally leads to a substantially greater demand for imports. In many countries, an increase in incomes also leads to a strong demand for foreign exchange as a hedge against expected depreciations in the external value of the local currency. Ordinarily, the banks will have to meet the increased demand for foreign exchange by purchasing exchange from the central bank, thereby drawing down their reserve balances and reducing their capacity to extend credit.

Thus, an expansion of credit on the basis of excess reserves sets in motion forces which reduce the reserves of the banks, thereby limiting the amount of credit expansion that can occur. These forces are especially strong in underdeveloped countries.

The origin of statutory reserve requirements

In England, the relationship between banks' holdings of cash and their deposit liabilities has been determined by custom and

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If $r = .20$ and $R = \$1,000$; and if 60% of any increase in the money supply takes the form of cash and the remaining 40% takes the form of deposits, so that $\Delta C = 1.5\Delta D$, then the formula $\Delta D \cdot r + \Delta C = R$ becomes $\Delta D(.20) + 1.5\Delta D = \$1,000$; and $\Delta D = \$588$. Since $\Delta C = 1.5\Delta D$, then $\Delta C = 1.5(\$588) = \$882$. Therefore, $\Delta D + \Delta C = \$1470$, which is the maximum potential increase in bank credit on the basis of \$1000 of excess reserves.

convention, and not by law.[1] Moreover, banks have been permitted to determine the distribution of their reserves between cash and deposits with the central bank. Banks in England developed the practice of depositing the bulk of their cash reserves with the Bank of England for reasons of convenience and security.

The private banks were the first to entrust their surplus cash to the Bank of England. The joint-stock banks, which sprang up in large numbers after 1826, adopted the same practice. The Scottish and Irish banks similarly came to use the facilities of the Bank of England. The practice of keeping balances with the Bank of England was expedited when the Bank opened branches in various parts of the country and when it took on the function of interbank clearing in 1854.[2]

For similar reasons, banks in other European countries adopted the practice of keeping their surplus reserves with the principal bank of issue in the country. The development of this practice was a definite advance in the direction of making such banks "bankers'

1/ "In Great Britain these decisions are left to the unfettered discretion of the bankers, that is, we may almost say, of those who control the policy of the five giant joint stock banks--Barclays, Lloyds, the Westminster, the Midland, and the National Provincial. But it is generally believed that the bankers regulate the volume of deposits in accordance with a customary rule of their own, which consists in keeping a certain rough proportion between their deposits and what are called their reserves." D.H. Robertson, Money (Cambridge, 1948), p. 51.

At present, however, British banks are "expected" by the monetary authorities to hold reserves of at least 8 per cent at all times, even though there is no legal requirement to this effect.

2/ M. H. DeKock, Central Banking (London, 1946), Second Edition, p. 68.

banks", and was an important step in the evolution of banks of issue toward the modern central bank of today.

In the United States, the question of the minimum amount of reserves banks should hold against their deposit liabilities, and the form in which the reserves should be kept, has not been left to the discretion of the individual bank. Statutory reserve requirements against bank deposits were a feature of our banking system long before a central banking system was established by the creation of the Federal Reserve System in 1913. Even prior to the enactment of the National Bank Act of 1863, Louisiana and Massachusetts required banks to hold a specified minimum reserve against deposits. In Louisiana the required reserves had to be held in specie; in Massachusetts they could be held in specie or in interbank balances.

The National Bank Act required all national banks to carry reserves against deposits as well as against notes. Deposit banking was still of relatively minor importance, however, and the purpose of the reserve requirements was principally to prevent over-issue of bank notes. The required reserves of the national banks could be held in the form of "lawful money" and, subject to certain limitations and exceptions, in balances with other banks.[1/]

1/ See Robert G. Rodkey, Legal Reserves in American Banking (Ann Arbor, 1934), Michigan Business Studies, Vol. VI, No. 5, Chapters 3-4. Also, The History of Reserve Requirements for Banks in the United States, Federal Reserve Bulletin (Washington, D. C.), November 1938, p. 955.

The institution of statutory reserve requirements against deposits seems to have been an American innovation. It represented a recognition by the authorities that the ease with which bank charters could be obtained in the United States almost inevitably led to the establishment of banks by persons with limited experience in banking who could not be depended on to maintain sufficiently high standards of liquidity and solvency unless required to do so by law. In other words, legal reserve requirements were originally imposed for the purpose of protecting the individual depositors by enforcing higher standards of prudence on banks than they would be likely to impose on themselves.[1/] It is for these reasons that banking in the United States, and in other countries which have adopted American practices and traditions, is subject to so many statutory regulations on matters of reserves, the types of loans and investments banks may make, the amount of deposits they may accept in relation to the size of their capital, and so forth.

The principle of requiring banks to hold reserves equal to a specified proportion of their deposit liabilities has been widely adopted in subsequent banking legislation of a number of other countries. The nature of the reserve requirements now in effect in such countries will be described in detail later on.

1/ Cf. Roland I. Robinson, The Management of Bank Funds (New York, 1951), p. 45.

The normal purpose of statutory reserve requirements

The normal purpose of statutory reserve requirements is to limit the volume of money which banks can create by their credit operations.[1] Originally, as has already been noted, the avowed purpose of limiting bank credit expansion was to protect the depositors. Without such restriction, it was feared that some banks might expand credit to a point where they could not meet their depositors' demands for cash. Reserve requirements guaranteed depositors that their banks would have to maintain at least a certain minimum degree of liquidity.

It has frequently been said that reserve requirements do not increase a bank's liquidity because required reserves cannot be paid out; hence, liquidity is provided only by excess reserves and by assets which can be readily converted into cash.[2] This observation is not entirely correct, however, on two counts.

In the first place, whenever depositors withdraw funds from a bank, the amount of required reserves which the bank must hold is reduced. If the reserve requirement is twenty per cent, for example,

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1/ The reason for using the adjective "normal" is that special kinds of reserve requirements have been proposed or adopted in some countries for purposes other than, or in addition to, limiting the total volume of bank credit. Principal among such purposes have been the regulation of credit to private borrowers on a selective basis, and the isolation of the market for government securities from the market for private credit.

2/ For example, such a statement appears in A.M. Allen, S.R. Cope, L.J.H. Dark, and H.J. Witheridge, Commercial Banking Legislation and Control (London, 1938), p. 18.

a withdrawal of $100 will reduce the volume of required reserves by $20. The remaining $80 can be obtained by drawing down the bank's excess reserves, if it has any, or by liquidating $80 of its earning assets. It is clear that the higher the compulsory reserve ratio, the larger will be the reduction in the amount of required reserves whenever a deposit withdrawal of a given amount occurs, and, correspondingly, the smaller will be the amount of earning assets which the bank will have to liquidate. Thus, if the required reserve ratio were 100 per cent, a deposit withdrawal would never necessitate a liquidation of earning assets. The bank's liquidity needs would be met entirely from its required reserves.

In the second place, nearly all legislation establishing reserve requirements provides that banks can draw down their reserves below the legal minimum, but at a penalty. The distinction between a required reserve and a voluntary reserve ordinarily is not that the latter can be used and the former cannot be used. The real distinction is that in the first case the government or central bank decides what an adequate minimum reserve shall be, whereas in the second case the matter is left to the discretion of the individual banker. In the one case a banker is induced by penalties to eliminate a reserve deficiency promptly; in the other case, he is not. This was made quite clear by the United States Comptroller of the Currency in his Annual Report for the year 1873 (p. XXV):

> "To claim that a bank cannot redeem its own notes upon presentation, and cannot pay the checks of its

> depositors on demand if the payment of such debts shall entrench upon its reserves, is equivalent to declaring that the national currency act was intended to provide for the destruction of the very institutions it had created. From the first organization of the system to the present time, the uniform decisions have been that the object of the reserve is to enable the bank at all times to pay its debts. In times of panic the depositors of a bank, and not its officers and directors, are its masters."

Moreover, the Federal Reserve Act, in Sec. 19, explicitly provides that:

> "The required balance carried by a member with a Federal Reserve Bank may, under the regulation and subject to such penalties as may be prescribed by the Board of Governors of the Federal Reserve System, be checked against and withdrawn by such member bank for the purpose of meeting existing liabilities."

Actually, however, most bankers endeavor to avoid incurring reserve deficiencies by keeping some excess reserves, or assets which can be liquidated at a moment's notice, such as call loans, foreign exchange, or short-term government securities (in countries where there is a broad market for such securities). They do this because a reserve deficiency of any duration might shake the confidence of the business and financial community in the soundness of the bank, and because the penalties on reserve deficiencies in most countries are much greater than the income sacrificed by maintaining an adequate amount of excess cash reserves or low-yielding quasi-cash assets. In short, even though required reserves <u>can</u> be used to meet unexpectedly large withdrawals of funds by depositors, the penalties on reserve deficiencies are usually so great that bankers find it advisable in practice not to rely on their required reserves for their liquidity requirements, except to the extent that such reserves are released as deposits are withdrawn.

Under Regulation D of the Federal Reserve Board, penalties for reserve deficiencies of member banks are assessed monthly at a rate equal to two percentage points per annum above the Federal Reserve Bank rate on discounts of ninety-day commercial paper for member banks.[1/] The penalty rate is applied against the average of daily deficiencies during each of the reserve computation periods ending in the preceding calendar month. Additional penalties may be imposed by the Board if the bank has repeated deficiencies. In the Philippines, to take another example, banks must pay a penalty of one-tenth of one per cent per day on any average daily deficiency occurring during any given week. Moreover, if a Philippine bank chronically has a reserve deficiency, the central bank may limit or prohibit the granting of new loans or investments by the bank and may require that part or all of the net profits of the bank be assigned to its surplus. The legislation of most other countries provides for comparable penalties.

In the case of commercial banks, which are in business for profit, penalties on reserve deficiencies make good sense. This is

1/ It should be noted that the only real penalty is the two per cent; the rest is equivalent to the interest charge the bank would have had to pay to the Federal Reserve Bank if it had borrowed from it instead of incurring a reserve deficiency.

to be distinguished from the case of central banks, where laws imposing penalties on reserve deficiencies are largely a result of a failure to recognize that the profit-motive has no role in determining central bank policy. Such provisions are a carry-over from the days when central banks were commercial banks with a special privilege of note issue granted by the government.

Nowadays it is recognized that reserve requirements are a poor way of assuring depositors of the liquidity of their banks in times of unusually heavy withdrawals. In such circumstances, in most countries at least, the central bank is expected to provide liquidity by monetizing assets of banks which are in distress. The purpose of reserve requirements, therefore, is no longer conceived of as being that of restricting irresponsible banks who might otherwise expand credit to such an extent as to jeopardize their ability to meet demands of their depositors for cash. As Roland Robinson observes in his book on the Management of Bank Funds:

> "The spirit of promotion and adventure that characterized bankers in the days of wildcat banking has largely passed; bankers are now, by reputation and by deed, rather cautiously disposed. There is no reason to fear that, if the legal reserve requirements were relaxed, there would be a deterioration in standards which would endanger the solvency of banks or the soundness of the banking structure." 1/

This quotation refers to bankers in the United States. Nevertheless, the conclusion drawn would be equally true of most other countries, including the underdeveloped countries. The purpose of reserve

1/ Robinson, op. cit., p. 45.

requirements nowadays is to enable the monetary authorities to control credit expansion by the banking system as a whole in order to prevent inflation.

This change in conception was well stated in a Report of the Committee on Bank Reserves of the Federal Reserve System, in 1931, which declared that:

> "The Committee takes the position that it is no longer the primary function of legal reserve requirements to assure or preserve the liquidity of the individual member bank. The maintenance of liquidity is necessarily the responsibility of bank management and is achieved by the individual bank when an adequate proportion of its portfolio consists of assets that can be readily converted into cash. Since the establishment of the Federal Reserve System, the liquidity of an individual bank is more adequately safeguarded by the presence of the Federal Reserve banks, which were organized for the purpose, among others, of increasing the liquidity of member banks by providing for the rediscount of their eligible paper, than by the possession of legal reserves."

Similarly, Governor Eccles of the Board of Governors testified at the hearings before the Congressional Subcommittee on Monetary, Credit, and Fiscal Policies of the Joint Committee on the Economic Report, on November 22, 1949, that:

> "In sharp contrast with State reserve requirements, those applied to member banks under the Federal Reserve Act are primarily designed to affect the availability of credit; that is to say, the money supply. The Federal requirements are not primarily applied for the purpose of providing a cushion to protect the individual bank."

Because bank reserve requirements in many of the underdeveloped countries have been patterned after the requirements adopted in the United States, it is worthwhile reviewing the historical evolution of some of the features of reserve requirements in this country.[1/]

The geographical classification of banks for reserve purposes. In the United States, banks which are members of the Federal Reserve System are classified into three categories: central reserve city banks, reserve city banks and country banks.

This method of classification had its origin in the circumstances prevailing at the time of the passage of the National Banking Act in 1863. Banks in small communities usually held balances with banks in larger cities to assure the redemption of their notes. Banks in most of the larger cities, in turn, kept balances with banks in New York. The National Banking Act, as amended in 1864, took cognizance of this system. Failure to include such interbank deposits as part of the required reserves against the note and deposit liabilities of the depositing banks would have placed quite a hardship on them, because they would need to hold such balances for working purposes in any event. It was essential, however, for banks holding the reserve deposits of other banks to be sufficiently liquid to meet withdrawals at all times, otherwise the entire banking system might collapse. It seemed reasonable, therefore, to require banks to be subject to higher reserve requirements if they were to have permission to hold

1/ The sources for the following historical review are: Robert G. Rodkey, Legal Reserves in American Banking (Ann Arbor, 1934), Michigan Business Studies, Vol. VI, No. 5, Chapter 4 passim, and the History of Reserve Requirements for Banks in the United States, Federal Reserve Bulletin (Washington, D. C.), November 1938.

deposits which could serve as part of the required reserves of other banks. It also seemed reasonable to prescribe special reserve requirements for banks in cities such as New York which held reserve deposits of banks in other cities which in turn held reserve deposits of banks in smaller communities.

The relative importance of correspondent accounts obviously varied considerably from bank to bank within any given city. Nevertheless, it was believed that a system of classifying cities rather than individual banks would be reasonably satisfactory, and it had the great merit of simplicity. This is the origin of the present geographical classification of banks for reserve requirement purposes.

The drafters of the Federal Reserve legislation desired to interfere with the existing banking structure only where there seemed good reason to do so. There seemed to be no pronounced agitation against the existing classification of central reserve city, reserve city and country (or non-reserve city) banks for reserve purposes, and apparently there was little consideration of eliminating this feature of the reserve structure provided for under the National Bank Act.

The underlying reasons for the geographical distinctions disappeared with the enactment of the Federal Reserve Act, however, because the required reserves of member banks had to be held in cash and in deposits with the Federal Reserve Banks, and, after an amendment to the Federal Reserve Act in 1917, entirely in the latter form. It is now felt by most students of banking that the system of geographical classification is anachronistic and discriminates against banks in the central reserve and reserve cities for no good reason.

The distinction between demand and time deposits for reserve purposes. The National Banking Act did not distinguish between various types of deposit liabilities, probably because it was not contemplated that national banks would accept time deposits.[1] In 1874, New Hampshire passed a law which subjected banks chartered by that state to higher reserve requirements on demand deposits than on savings deposits. This was the first law in the United States or elsewhere which clearly distinguished between demand deposits and savings deposits for reserve purposes and specified lower requirements for the latter. The reason for the distinction was that such deposits were considered less likely to be subject to sudden heavy withdrawals that would endanger the liquidity of the bank. Thus, with the New Hampshire legislation, differences in the probable degree of stability of the different classes of deposits held by a bank came to be recognized as an element to be taken into consideration in the establishment of legal reserve ratios. This principle was adopted by several other states and later by the drafters of the Federal Reserve Act.

In 1889, Nebraska adopted a reserve act which went even farther than the New Hampshire legislation in its efforts to adjust

1/ Cf. E. A. Goldenweiser, American Monetary Policy (New York, 1951), p. 39 n.

required reserve ratios to the likelihood of withdrawals, and hence to the need for liquidity. Higher requirements were fixed for bankers' balances than for other demand deposits, and the requirements for other demand deposits, in turn, were made higher than those for savings deposits. The Nebraska law did not stop at this point, however. It also classified banks according to their location, and established different reserve requirements against demand deposits for banks in each of the geographical categories.

The Federal Reserve Act (1913) was the first national legislation to differentiate between demand and time deposits for reserve purposes. It established much lower reserve requirements for time deposits. One of the reasons for this was to enable the national banks to compete with state-chartered banks for time deposits on more equal terms, because state banking legislation generally either required no reserves against savings and time deposits or else required a smaller reserve than against demand deposits. The smaller probable fluctuations in withdrawals of time deposits, which is the reason that motivated lower reserve requirements against savings and time deposits in state banking legislation, was doubtless also an important consideration influencing the drafters of the Federal Reserve legislation.

The usefulness of a distinction between demand and time deposits for reserve purposes may be questioned now that the purpose of reserve requirements is to place a limit on the ability of the banking system to expand credit on the basis of any given amount of reserves, rather than to assure that the individual bank will be sufficiently liquid to meet withdrawals of deposits.

It may be contended that checking accounts are money, whereas savings and time deposits are not, because they are not means of payment, and that, accordingly, there is no need to limit their volume as strictly as that of demand deposits. This line of reasoning overlooks the fact that debits to savings and time deposits may finance--and do finance--purchases of goods almost as directly as do debits to checking accounts. The only difference is that a debit to a checking account usually represents a payment in itself, whereas a withdrawal from a savings or time account ordinarily represents a payment casting its shadow before it.

The form in which required reserves must be held. The Federal Reserve Act, as passed in 1913, not only stipulated that member banks must hold certain minimum reserves against their deposit liabilities; it also provided that they must keep a certain minimum proportion of these reserves on deposit with the central bank; that is, with the Federal Reserve Banks. In the United States, therefore, unlike England, the role of the central bank as the principal depositary of bank reserves did not evolve gradually on a voluntary basis; it came into being as a result of legislation.

Under the Federal Reserve Act as originally enacted, member banks also had to hold a specified minimum proportion of their required reserves in the form of cash in their own vaults. The total of these two minimum proportions was less than the total required reserve, and banks were given the option of holding the remainder on deposit with the Federal Reserve Banks or of keeping it in their own vaults.[1/]

In 1917, these provisions of the Federal Reserve Act were amended. The minimum reserve requirements were reduced from 5 to 3 per cent for time deposits for all member banks and from 12, 15, and 18 per cent to 7, 10, and 13 per cent, respectively, for demand deposits of country, reserve city, and central reserve city banks. The entire required reserve had henceforth to be kept on deposit with the Federal Reserve Banks. Cash in vault could no longer be counted as part of the legal reserve.

The significance of this change is sometimes misinterpreted. For example, one commentator on the subject has stated that:

> "The shift of required reserves from the vaults of member banks to the vaults of the Federal Reserve Banks was not simply a change in physical location. It made a change in the character and effectiveness of the reserves and enabled them to serve more adequately their original purpose.
>
> "A first basic principle which gives greater effectiveness to reserves under the Federal Reserve System is the insurance principle of distributing the risk ... Under the old scheme, each bank set aside its own funds against emergencies. The result was that no one bank was able to set aside a sufficient sum to meet its needs in case of a real emergency. But under the Federal Reserve System

1/ Vault cash eligible for reserves did not include national bank notes, Federal Reserve notes or Federal Reserve Bank notes.

> the reserves of the cooperating banks are pooled and are thus available to meet the emergency of any member or group of members, provided they have not impaired their borrowing power by dishonest or imprudent banking methods." 1/

In reality, however, the shift of reserves to the central bank does not involve any "insurance principal of distributing the risk". A distinction must be made between a central bank's function of depositary of the cash reserves of the banks and its function of lender of last resort.

The first of these functions is not essential to the second. The ability of the Federal Reserve Banks to lend money to banks in times of need, or at any other time for that matter, is not derived from their acting as depositary of the cash reserves of the banks. If the Federal Reserve Banks could lend only what was deposited with them, the pooling of reserves would indeed enable them "to serve more adequately their original purpose". As it is, however, the lending capacity of the Federal Reserve Banks, and of central banks in general, is not limited to the funds deposited with them. Moreover, if it were, central banks would be unable to assist commercial banks in periods of financial panic during which the public was withdrawing large amounts of cash from the banking system as a whole.

What limits the magnitude of central bank lending operations are the statutory provisions prescribing the types of assets the

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1/ W. Randolph Burgess, The Reserve Banks and the Money Market (New York, 1936), Revised Edition, pp. 26-27. See also M. H. DeKock, op. cit., pp. 69-70.

central bank may hold, and the minimum gold (or gold and foreign exchange) reserve which it must keep against its liabilities. Whether the cash reserves of the banks are stored in the vaults of the banks or are deposited with the central bank makes no difference, except to the extent that these reserves consist of gold or other assets which the central bank is legally required to hold in a certain proportion to its sight liabilities.

Plumptre has explained this very clearly in his excellent study of central banking in the British Dominions:[1/]

> "A central bank creates legal tender money and thus there is no financial or economic obstacle to prevent it doing so spontaneously: it can create money for lending and investing and does not have to begin by acquiring deposits or capital or anything else. An obstacle to this unorthodox procedure lies, however, in the constitutions of most central banks; for they are legally required to hold a certain minimum proportion of gold or foreign assets against their notes and other demand liabilities. When commercial banks make deposits with a central bank these are usually brought in the form of gold and foreign exchange; so that the deposits of the commercial banks give to the central bank <u>not the local funds which are economically or financially required for local operations but rather the gold and foreign funds that are legally required</u> for local operations."

This is the only sense in which the centralization or "pooling" of bank reserves may be said to affect the lending capacity of a central bank, and it was a consideration of this sort which motivated the amendment to the Federal Reserve Act in June 1917. At that time,

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1/ A. F. W. Plumptre, <u>Central Banking in the British Dominions</u> (Toronto, Canada, 1947), p. 263.

the Federal Reserve was concerned about its ability to finance the government's needs for credit during the war. By compelling member banks to hold all of their required reserves in the form of deposits with Federal Reserve Banks, the Federal Reserve System acquired Treasury currency and gold from the banks, and this in turn enlarged the credit potential of the System. The Annual Report of the Federal Reserve Board in that year states that these amendments "were most opportune, as they added greatly to the ability of the Federal Reserve System to assist in meeting the financial requirements of the government, and to exercise a controlling influence in the money market, just at a time when much larger demands were being made upon it because of war financing".

The credit potential of the Federal Reserve was enlarged not only by the acquisition of gold but by another circumstance as well. The Federal Reserve Banks had to keep reserves of 40 per cent <u>in gold</u> against their note issue. Against their deposit liabilities, on the other hand, they had to hold reserves of only 35 per cent, and these reserves could be in gold <u>or</u> lawful money. Thus, the amendment enlarged the credit base not only by bringing gold and "lawful money" into the Reserve Banks but also by getting banks to exchange Federal Reserve notes for Federal Reserve deposits.

Inasmuch as banks in the United States no longer can hold gold or gold certificates, and inasmuch as the same reserve ratio (i.e., 25 per cent) now applies to both the note and deposit liabilities of the Federal Reserve Banks, the original reasons for excluding vault cash from required reserves of member banks no longer are meaningful. Under present-day conditions, the credit potential of the banking system is unaffected by the location of the required reserves. If banks could count vault cash as reserves, this would be fairer to banks in rural areas and in locations where till money requirements are large for one reason or another.[1/] The lower reserve requirements for country banks compensate them to some extent for their greater needs for till money, but they are not a very precise way of dealing with the problem.

The use of reserve requirements as an instrument of credit regulation. The Federal Reserve System was not empowered to use reserve requirements as a flexible instrument of credit regulation until 1933. Prior to that time, the reserve requirements were specified by law and could be changed only by Congress. Congress had changed

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1/ The Report of the Committee on Bank Reserves of the Federal Reserve System, in 1931, stated that the amount of vault cash reserves a member bank held depended mainly on whether or not it was located in the immediate vicinity of a Reserve Bank. If a bank was close enough to a Federal Reserve Bank or branch to obtain additional currency when needed, within a matter of almost minutes, it could deposit for credit to its reserve balance a large proportion of the vault cash which its business would otherwise require it to hold in its vaults. On the other hand, banks which, because of their location, could not obtain additional currency so readily had to hold larger amounts of cash in their vaults. A special study of the daily vault cash holdings of member banks revealed that banks in the second category held more than three times as much cash as banks in the first category, relative to deposit liabilities. Thus, the elimination of vault cash from legal reserves gave banks located very near a Federal Reserve Bank or branch an advantage over banks located elsewhere.

the requirements only once, in 1917, as noted above. The so-called Thomas Amendment in 1933 provided that the Federal Reserve Board, with the approval of the President, could declare that a national emergency existed by reason of credit expansion and that during such an emergency the Board could alter the required reserve ratios to which member banks would be subject. This was the first time that any country adopted flexible reserve requirements as an instrument of credit regulation.

This authority was very broad. No limits were placed on the height to which the requirements might be raised. However, the stipulation that a national emergency must be declared, and that the approval of the President must be obtained, greatly limited the practicality of using changes in reserve requirements as an instrument of credit restraint. It should be noted that the Thomas Amendment was concerned solely with checking an inflation and that the use of reserve requirements <u>lower</u> than those then existing, for the purpose of moderating a recession, was not contemplated. The Board never used the authority granted it under the Thomas Amendment.

The Banking Act of 1935 authorized the Board to raise or lower reserve requirements at its discretion, without having to get the approval of the President or to declare a national emergency, but the requirements could be varied only within limits which could never be lower than they were at the time the Act was passed or higher than twice that amount.[1/]

The circumstance which gave rise to the development of flexible reserve requirements as an instrument of credit regulation in the United States was the rapid increase in the excess reserves of the banking system beginning in 1932. At first, the cause of the increase was an expansion of Federal Reserve Bank purchases of government securities. The expansion in Reserve Bank credit from such purchases ceased at the end of 1933, but was succeeded by a large inflow of gold; as a result, excess reserves continued to rise at a rapid rate. The monetary authorities became concerned about the possibility of an inflationary expansion of bank credit on the basis of these reserves. It was feared that open-market operations by the Federal Reserve would be incapable of coping with the situation if an inflationary process should gain momentum. A new instrument of credit regulation was clearly needed to reduce the excess reserves of the banking system to an amount that could be effectively controlled through open-market operations. The Board has used this authority on a number of occasions. At the present time (February 1952), the requirements are at their statutory peaks, except for demand deposits in central reserve city banks, which are two points below the statutory maximum of 26 per cent.

1/ This meant lower limits of 13, 10 and 7 per cent against demand deposits for central reserve city banks, reserve city banks and country banks, respectively, and of 3 per cent against time deposits for all member banks.

Reserve requirements in other countries

During the past three decades, a great many other countries have adopted the American practice of establishing deposit reserve requirements for banks, as may be seen in Table I. In the United States, as has been pointed out, the reserve requirements for member banks call for the holding of reserve deposits in the Federal Reserve Banks, and the purpose is to regulate any expansion in the total volume of credit. In many other countries, however, reserve requirements of special kinds have been imposed for the dual purpose of limiting credit expansion and regulating the distribution of bank credit on a selective basis. For the most part, the selective objective of such requirements has been one or more of the following:

(1) preventing the banks from disposing of their holdings of short-term public debt;

(2) assuring the government of continued assistance from the banks in financing budgetary deficits and in refinancing maturing debt;

(3) promoting the development of a government securities market where one does not yet exist, or

(4) encouraging the extension of bank credit to private borrowers for purposes regarded by the government or the central bank as being in the national interest.

The way in which reserve requirements endeavor to serve these special purposes is by permitting or compelling banks to include government securities and/or certain favored kinds of loans among their required reserves. By this device, banks are induced or compelled to retain their existing holdings of such assets and to increase their holdings whenever the amount of their deposit liabilities becomes greater.

In some foreign countries, the ordinary reserve requirements have been supplemented by special higher requirements which apply only to increases in the volume of a bank's deposits above a specified base amount. Supplementary reserve requirements of this type enable the monetary authorities to apply a strong curb to credit expansion without forcing any bank to contract the existing amount of credit it has outstanding.

In addition to what would commonly be considered as "reserve requirements", the banking legislation of a number of countries establishes a minimum proportion which banks must maintain between their total short-term assets and their deposit liabilities (in some instances the relationship applies only to demand deposit liabilities). The purpose of these provisions generally is not to limit the total volume of bank credit, or to direct its flow into specific channels; it is to assure that banks will be sufficiently liquid to meet withdrawals of deposits without having to borrow from the central bank except in special circumstances.

Europe. Banks in the United Kingdom, Spain, Ireland, and Finland are not subject to statutory reserve requirements. As was noted earlier, however, banks in the United Kingdom are "expected" by the monetary authorities to maintain reserves in the form of cash and deposits with the Bank of England equal to at least 8 per cent of their deposit liabilities.

Germany is the only Western European country which has adopted the United States practice of making reserve requirements depend partly on the geographic location of banks. It is also one of the few European countries which distinguishes between different classes of deposit liabilities for reserve requirement purposes.

Of the countries in Western Europe which require commercial banks to hold reserves against deposit liabilities, required reserves are limited to cash and/or deposits with the central bank only in Denmark, Germany, Portugal and Switzerland. In France, required reserves are limited to government securities; in Italy, the entire required reserves may be held in the form of government or government-guaranteed securities. In the remaining countries of Western Europe, at least part of commercial bank required reserves may consist of government securities.

The extensive use of securities-reserve requirements in Western Europe during the postwar period warrants a brief review of their background and purposes. In the first few years of the postwar period, most of the European countries found it impossible to avoid budgetary deficits which had to be financed in part by borrowing from the central bank. As a result of financing part of the deficit in this fashion, the cash reserves of the banking system were enlarged. Even to the extent that the deficits were financed by sale of Treasury bills to the banks, there was always the danger that the banks might allow the bills to run off in order to obtain additional cash reserves with which to finance a more rapid expansion of private credit. Notwithstanding the fact that interest rates on Treasury bills were already at relatively high levels in many of the countries, banks were reluctant to invest in such obligations because rates on private credit were even more attractive and, in addition, banks were interested in helping their private customers rehabilitate their businesses. Given the heavy demand for bank credit by businesses and consumers and the very liquid position of the banks, the most effective way of preventing an inflationary spiral was to take strong measures to restrict credit expansion.

In these circumstances, a small increase in cash reserve requirements would have had little or no effect in restricting bank credit expansion. A large increase in the cash reserve requirements, on the other hand, would have forced banks to liquidate a substantial part of their holdings of government securities, and this would have had a drastic effect on their earnings position. By permitting banks to hold all or part of their required reserves in the form of government securities, over-all reserve requirements could be raised and bank credit expansion could be limited without forcing banks to liquidate part of their current holdings of earning assets.

The securities-reserve requirements had another desirable effect. Because they immobilized all or nearly all of banks' existing holdings of Treasury bills and required that a substantial part of any increase in deposits be invested in such obligations (or be held as idle cash), banks could not proceed very far in the direction of increasing their loans to private borrowers without finding it necessary to seek accommodation from the central bank. At this point, the central bank could charge a high discount rate and make its assistance very expensive. Thus, the securities-reserve requirements adopted in Europe in the postwar period have made the classical instruments of the discount rate effective. In fact, this has been one of the avowed purposes of these requirements in the countries in which they have been employed.

Although the main purpose of the securities-reserve requirements in these countries has been to prevent banks from shifting from Treasury bills to private loans, it should be noted that an important by-product has been assurance to the government that the commercial banks would continue to help finance budgetary deficits and refinancing operations. This consideration seems to have been of some importance in both France and Italy.

In general, there is much less emphasis on formal statutory authority to fix and to alter reserve requirements in Europe than there is in countries elsewhere. In most European countries, the central bank, in agreement with the Minister of Finance, could, as a practical matter, modify the existing reserve requirements even in the absence of specific statutory authority.

In France, the reserve requirements are fixed by the Bank of France, on advice of the National Credit Council and in agreement with the Minister of Finance. In Germany, the requirements are left entirely to the discretion of the Central Bank Board. Similarly, in the Netherlands, the central bank determines the reserve requirements. In Belgium, the requirements are fixed by the Banking Commission. In Sweden, the central bank, with the authorization of the government, may fix the reserve requirements at any level not higher than 25 per cent. In Italy, the Inter-Ministerial Committee for Credit and Savings can change the reserve requirements.

British Dominions. Commercial banks in Canada and South Africa are subject only to a cash deposit-reserve requirement. New Zealand banks are also subject to a deposit-reserve requirement, but the central bank may authorize commercial banks to hold part of their required reserves in government or other securities of sorts which the central bank itself may acquire. A distinction is made between time and demand deposits for reserve requirement purposes in New Zealand and South Africa, but not in Canada.

Australia represents a special case in that it has no reserve requirements against deposit liabilities. However, banks in Australia are required to hold deposits (so-called "special accounts") with the Commonwealth Bank in an amount equal to a specified proportion of any increase in their total assets. In effect, this is practically the same as a reserve requirement against increases in total deposits.

In Australia, reserve requirements can be altered at the discretion of the central bank. In New Zealand, reserve ratios can be varied by the Governor of the Reserve Bank "acting with the authority of the Minister of Finance", but cannot be lowered to less than 7 per cent for demand and 3 per cent for time deposits. There are no provision for altering reserve ratios by administrative action in Canada and South Africa.

Asia. Of the countries of Asia for which information is available (see Table I), all but Japan have statutory reserve requirements for commercial bank deposit liabilities. Only Ceylon, Pakistan and the Philippines make a distinction between demand and time deposits for reserve requirement purposes. Required reserves must be held entirely in the form of cash and/or deposits with the central bank in Iran, Iraq, Korea, Pakistan and Thailand.

Banks in Turkey are permitted to hold part of their required reserves in the form of government securities. On authorization of the central bank, commercial banks in Ceylon, India and the Philippines may also hold certain approved earning assets as part of their reserves. In order to diminish the traditional reluctance of Philippine banks to invest in government obligations, and to take a first step toward developing a government bond market in that country, the Philippine central bank at the present time permits the commercial banks to hold part of their required reserves in the form of short-term government securities.

Central banks in Ceylon, Korea and the Philippines have discretionary authority to alter the reserve requirements; they are also authorized to impose supplementary reserve requirements of up to 100 per cent against increases in deposit liabilities.

Latin America. Banks are subject to reserve requirements against their deposit liabilities in all of the Latin American republics except Argentina and Haiti.[1/] El Salvador is the only country which makes no distinction between demand and time deposits for reserve requirement purposes, and Mexico is the only country where reserve requirements differ according to a bank's geographic location.

In eleven of the eighteen republics having reserve requirements, banks are required to hold their entire required reserve in the form of cash and/or deposits with the central bank.[2/] Government securities may be included as part of the required reserves only in Brazil, Chile, the Dominican Republic, Mexico, Nicaragua and Uruguay.

In Uruguay, there is apparently no limit of the extent to which required reserves may consist of government securities. In Costa Rica, certain mortgage bonds may be counted as a part of required reserves, but government securities and other earning assets may not. In addition to government securities, banks in Chile and Mexico may include certain government-guaranteed loans and securities as a part of their required reserves.

The banking legislation and/or special decrees in nine of the Latin American countries provide for the establishment of supplementary

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1/ In Argentina, commercial banks may accept deposits only for the account of the central bank. In Haiti, there are only two commercial banks, and neither of them is required to maintain a minimum reserve against deposits.

2/ Bolivia, Colombia, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Panama, Paraguay, Peru and Venezuela.

reserve requirements against increases in deposits.[1/] In most of these countries, the supplementary requirements can be made as high as 100 per cent. As far as available information indicates, only three of the nine countries--Colombia, Peru and Mexico--have actually imposed supplementary requirements against increases in deposits.

The main purpose of the provisions permitting banks in some of the Latin American countries to count government securities and other earning assets as part of their required reserves is to develop a market for securities and to provide banks with an incentive to make certain types of loans. The most outstanding example is Mexico, where a supplementary reserve requirement of 100 per cent against increases in deposit liabilities has been used as a means for forcing banks either to make investments and loans and investments of certain types, or to hold large amounts of idle cash.

In eight of the Latin American republics,[2/] the central bank has undivided authority to alter the reserve requirements, but usually within a range prescribed by law. In Colombia, the central bank may change the reserve requirements but the Minister of Finance, who is a member of the central bank board, is empowered to veto any proposed change in the requirements if he so desires. In Chile and Venezuela,

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1/ Colombia, Cuba, the Dominican Republic, Ecuador, Guatemala, Honduras, Mexico, Paraguay and Peru.
2/ Costa Rica, Cuba, the Dominican Republic, Ecuador, Guatemala, Honduras, Mexico and Paraguay.

the central bank may alter the reserve requirements if it first obtains the approval of the President. It may be recalled that a similar procedure of presidential approval was established in the United States by the Thomas Amendment of 1933, but was eliminated by the Banking Act of 1935. In Uruguay, the President of the Republic fixes the requirements but with the advice of the central bank.

In Peru, changes in reserve requirements, within a prescribed range, may be made by the Superintendent of Banks at the request of the central bank and with the approval of the Minister of Finance.

In Bolivia, changes in the reserve requirements are made by cabinet decree initiated by the Minister of Finance, or are made by legislative action. The central bank apparently has no formal responsibility in the matter.

In Brazil, which has no true central bank, but has a Superintendency of Money and Credit which is an interim body having certain central bank attributes, part of the reserve requirements may be altered by the Superintendency within a certain range.

In El Salvador, Nicaragua and Panama, the reserve requirements may be changed only by legislative action. In Nicaragua, however, the National Superintendency of Banks may permit a lowering of the statutory requirements by one-quarter in special cases.

Effectiveness of flexible reserve requirements as an instrument of credit regulation

The restraining effect of an increase in reserve requirements depends on the extent to which banks have excess reserves and can obtain additional reserves at a cost that is not prohibitive. If the banking system as a whole has large excess reserves and/or other assets which it can readily convert into reserves without a capital loss, a small increase in reserve requirements may have little or no visible restraining effect. In these circumstances, substantial increases in reserve requirements and/or substantial sales of government securities by the central bank may be necessary to reduce the liquidity of the banking system to a point where credit expansion would be effectively restricted.

The ability of banks to borrow abroad is also of some importance in determining the extent to which a given increase in reserve requirements will curb their loan operations. For example, a branch of an American or British bank in a foreign country might find it profitable to borrow from its head office in the United States or England, if interest rates are lower there, in order to meet higher reserve requirements without curtailing the volume of its loans. The head office would, of course, be willing to lend to its foreign branch only if it had complete confidence in the stability of the foreign currency, or if the branch could obtain a forward exchange contract as a hedge against any possible depreciation of the local currency. Thus, if a considerable amount of the banking in a country is conducted by branches of foreign banks, and if there is little doubt about the future stability and convertibility of the country's currency, efforts of the central bank to tighten credit by the use of higher reserve requirements may be hampered, up to a certain point, by borrowings from head offices abroad. Similarly local banks might find it profitable to meet higher reserve requirements by borrowing from correspondents abroad. In general, however, such responses to increases in reserve requirements would be of a short-run, transitional nature and would not prevent an eventual restriction of bank credit.

The widespread use of exchange restrictions nowadays and the general lack of confidence in so many currencies makes the operations just described of academic rather than practical interest in most countries, but it is to be hoped that more normal conditions will return in the not-too-distant future. When they do, short-term international borrowing may once more be an important potential source of bank reserves, and may complicate the efforts of the monetary authorities to restrain bank credit expansion.

In situations in which banks have few excess reserves and other assets which can be converted into cash at will and without loss, and in which banks are unable to borrow large sums abroad at relatively low rates of interest, a small increase in reserve requirements will be sufficient to restrict credit expansion. It will also tend to make the discount rate of the central bank an effective instrument, because banks will find it necessary to borrow from the central bank more often.

It should be noted that large holdings of short-term government securities by banks need not seriously impair the effectiveness of increases in reserve requirements <u>if</u> there is a broad market for such securities outside of the banking system and if the monetary authorities are prepared to allow the prices and yields on such securities to adjust in the market without significant interference by the central bank. If banks endeavored to meet increases in reserve requirements by letting maturing issues run off, the Treasury would find it necessary to offer sufficiently higher yields to induce non-bank investors to increase their holdings by an amount equal to the reduction in bank holdings. As a consequence, the efforts of the banks to obtain additional reserves in this manner would be thwarted. Moreover, as bank sales of non-maturing issues of government securities tended to depress their prices and raise their yields, banks would become increasingly reluctant to sell, because of the capital losses involved. In addition, government securities would tend to become a relatively more attractive form of investment, and some banks would doubtless expand their holdings of government securities.

In recent years, banks in the United States have held large amounts of government securities. In many cases, they have regarded a substantial portion of these holdings as temporary investments, which they would liquidate as soon as more profitable opportunities for making loans appeared. Until the Treasury-Federal Reserve accord of March 4, 1951, the policy of the Federal Reserve was to support the prices of government securities. A consequence of this policy was that banks could convert their government security holdings into additional reserves at will and without loss. In circumstances such as these, a very large increase in reserve requirements would have been required to prevent the banks from expanding private credit.

In most of the underdeveloped countries, banks and the public hold very few government securities and, as a result, there is little scope for open-market operations. To a considerable extent, however, increases in reserve requirements can serve as a substitute for open-market sales of government securities in these countries. They can reduce the credit-expansion potential of the banking system and can make it necessary for the banks to borrow from the central bank, at which point the central bank's discount rate can become an effective instrument of credit regulation.

Plumptre, however, is quite skeptical of the use of variable minimum reserve requirements as an instrument of credit control in underdeveloped countries, on the following grounds:

> "it is possible that those who are most optimistic regarding the use of variable minima in narrow markets have not taken sufficient account of the fundamental nature of these markets and of the normal behaviour of the banks which operate in them. The postulate of such control is that the commercial banks should pay attention to their local cash ratios, and it seems that, in narrow markets, they cannot be expected to do so. The credit policies of the banks are not normally influenced by the position of their local cash reserves; nor will they be normally influenced by changes in the legal minima." 1/

1/ Plumptre, op. cit., pp. 269-270.

This would appear to be a rather extreme position and it turns out that Plumptre is apparently thinking of a special situation which existed in certain of the countries which he was studying. In Australia, New Zealand and South Africa, prior to World War II, the banks customarily held their excess funds in the form of London balances. According to Plumptre, if reserve requirements had been raised (in practice they never were), the initial reaction of banks in those countries would not have been to contract loans; instead they would have sold part of their surplus London balances to the central bank. An expectation of this sort of reaction has led Plumptre to believe that the only real usefulness of variable reserve requirements in countries where banks have large foreign balances is to enable the central banks to get possession of part of these funds. 1/

Plumptre thinks that a variable minimum reserve ratio which would relate all liquid assets (i.e., cash, balances with central bank, and foreign exchange holdings) to deposits would be more effective in regulating the volume of credit than would one which included only local cash holdings as reserves, because

> "this is a ratio to which the banks are accustomed to pay considerable attention; and, more important, an increase in the minimum liquid-asset-proportion above the actual could only be met by restriction of commercial banks' loans and investments. Its effectiveness could not be postponed by sales of London funds or other measures." 2/

1/ Plumptre, op. cit., p. 272.
2/ Ibid., p. 271.

The only apparent merit in a proposal which would permit foreign exchange holdings to be counted as required reserves is that it might encounter less resistance from the banks. Under such a scheme, a reserve requirement high enough to prevent an expansion of bank credit would not compel the banks to sell their foreign exchange holdings to the central bank, which they would have to do if the requirements were raised to the same level and had to be met by deposits with the central bank. From the standpoint of credit control, however, it would seem to be immaterial whether legal reserves include or exclude banks' foreign exchange holdings. In either event, the reserve ratio necessary to immobilize funds which could provide the base for a credit expansion would be about the same, and only the <u>form</u> in which required reserves are held would be substantially affected.

The situation which Plumptre outlines is not one in which increases in the ordinary type of reserve requirement would be unable to restrain bank credit expansion. Rather, it is a kind of situation in which the actual and potential reserves of the banking system are so large that reserve requirements would have to be raised to quite high levels before banks would be compelled to restrict their domestic credit operations. This is a different matter, of course.

At the present time, banks in nearly all of the underdeveloped countries hold their excess funds as cash in vault or as deposits with the bank of issue, rather than holding them abroad. For one thing, there are foreign exchange regulations in effect in most countries which prevent banks from building up large net holdings of foreign currency assets. Accordingly, the imposition of higher reserve requirements in present circumstances is almost always for the purpose of credit restraint, and is seldom for the purpose of compelling banks to deliver part of their foreign exchange holdings to the central bank.

One of the problems involved in raising reserve requirements is that they usually strike banks with unequal severity. The reason for this is that the excess reserves of the banking system are seldom distributed very evenly among the individual banks. For example, it is not uncommon, in many of the non-industrialized export economies, for one or two of the banks to get a disproportionate share of the export bills. In such circumstances, the initial increase in bank reserves during periods of heavy exports is likely to be limited to a few banks. These reserves are distributed among the other banks only later as exporters spend their proceeds and as the banks in question expand their loan operations. There are many other types of circumstances in which increases in reserve requirements would force some banks to call in loans and to put their customers to great inconvenience, while at the same time other banks might not be forced to contract credit at all and some of them might even be able to expand their loans substantially. It is also conceivable that holdings of excess reserves, or of potential reserves, might tend to vary considerably from one region to another in such a way that increases in reserve requirements would cause a serious stringency of credit in certain regions while still permitting an expansion in other regions. It might well happen that these regional effects might be undesirable in many instances.

A selective rediscount policy can smooth the transition for individual banks when reserve requirements are raised. To some extent, therefore, the transitional difficulties of individual banks can be mitigated. Nevertheless, the problems of equity have been, and doubtless will continue to be, one of the most serious drawbacks to the use of flexible primary reserve requirements as an instrument of credit regulation.

It may be worth noting, in passing, that the problem of equity is particularly serious in the United States, because the Federal Reserve Board's authority with respect to reserve requirements is limited to member banks. Member banks hold approximately 85 per cent of total deposits in all commercial banks in the United States, even though they represent only about half of the total number of such banks. In this situation, it might seem that control over the volume of deposits of member banks would be sufficient to regulate bank credit as a whole. To a considerable extent this is probably so. However, the immunity of non-member banks to higher reserve requirements set by the Federal Reserve Board poses a serious problem. A rise in reserve requirements high enough to be very significant in checking credit expansion by member banks might tend to drive loan business to non-member banks, as long as the reserve requirements imposed by the state banking authorities were lower than those for members of the Federal Reserve System. As a result of their preferred competitive position, non-member banks could grow more rapidly and make larger earnings than their member-bank competitors. This would hardly be fair. Moreover, the inequities of the situation might, in some circumstances, convince a large number of member banks that they should withdraw from the System.

If the withdrawals from the System became very numerous, Congress would probably find it necessary to pass legislation making all banks subject to the reserve requirements prescribed by the Federal Reserve Board. The opposition of non-member banks to such legislation might be sufficiently great, however, to make Congress unwilling to take action until the problem of withdrawals of member banks had become very acute. As a practical matter, as long as the present division of authority continues, recognition of the inequitable impact on member banks would probably deter the Federal Reserve Board from raising requirements beyond certain limits, even if it had the statutory authority to do so.

Another problem which arises in connection with the use of variable reserve requirements as an instrument of credit regulation in any country is that the reaction of bankers in restricting, or in failing to restrict, certain types of credit may be different from what the monetary authorities regard as in the national interest.

In order to overcome the problems of inequitable or undesirable incidence of higher reserve requirements on individual banks and on the availability of credit for specific purposes, considerable attention has been given during recent years, in both the developed and underdeveloped countries, to novel types of reserve requirements. Many foreign countries are presently experimenting with such devices, as was observed in the section on reserve requirements in foreign countries. Some of these new kinds of requirements are primarily concerned with the problem of minimizing the transitional hardships for individual banks when reserve requirements are raised. Others are concerned principally with the problem of inducing banks to retain, or increase, their holdings of certain types of assets at the expense of other types of credit. In some instances, both of these objectives are sought. The following sections will discuss the advantages and disadvantages of some of these special reserve plans.

The advantages and disadvantages of deposit-expansion reserve requirements as a supplement to primary reserve requirements

In order to overcome the problem of inequitable incidence which is posed by substantial increases in primary reserve requirements, considerable attention has been given in recent years to the use of a supplementary reserve requirement which would be applied to future increases in bank deposits. In fact, as has already been noted, several foreign countries have put requirements of this sort into effect, and in a number of other countries, especially in Latin America and the Far East, the central bank has been granted authority to impose such requirements.

Under such plans, a deposit "quota" is established for each bank, based on the amount of its deposit liabilities as of some recent date, or on the average amount of its deposits during a recent period. As long as a bank's deposits do not exceed its "quota," the bank is subject to only the regular, or primary, reserve requirements. Whenever the amount of its deposits exceeds the quota, however, the bank is subject to a much higher reserve requirement against the excess of deposits above the quota.

If the reserve requirement against increases in deposits is made 100 per cent, commercial banks as a group can not expand their loans except to the extent that: (1) they have excess reserves at the time the supplementary requirement goes into effect, and (2) they can obtain additional excess reserves from the central bank either by borrowing from it or by selling assets to it, such as foreign exchange or government securities. Additional reserves obtained as a result of gold inflows from abroad, a return of currency to the banks from circulation, the drawing down by the government of its deposits with the central bank for the purpose of financing domestic expenditures, or as a result of central bank purchases of government securities from the public, would increase both the deposit liabilities and the required reserves of the banks by equal amounts, under a 100 per cent supplementary reserve requirement, and no increase in loans or investments would be possible.

A supplementary reserve requirement of the sort discussed in this section may be a very useful instrument for restraining credit expansion in underdeveloped countries in periods in which an inflow of gold and foreign exchange, or government borrowing from the central bank, is expanding bank reserves at a rapid rate. The supplementary requirement will be especially effective if, at the time it is imposed, banks do not hold foreign exchange greatly in excess of their working requirements and if few banks have large amounts of excess reserves. In these circumstances, the central bank's discount rate can also be made an effective instrument of credit regulation, because banks will be dependent on central bank accommodation if they desire to expand their loans to any extent.

In countries such as the United States, in which holdings of government securities represent a large proportion of banks' earning assets, a supplementary reserve plan of this sort would have to be accompanied by open-market and debt-management policies which would prevent the commercial banking system from obtaining additional reserves at will and without cost by selling government securities to the central bank or by allowing maturing issues of such securities to run off. Otherwise, the effectiveness of such a reserve plan could be greatly diminished if banks chose to increase their excess reserves by letting maturing issues of government securities run off or by selling part of their holdings to the central bank. Such sales might be very large if the central bank were rigidly supporting the prices and yields of such securities. In these circumstances, increases in the demand for credit by private borrowers would tend to widen the spread between the yields on loans and on government securities. The relatively increased yields on private credit, together with a desire on the part of banks to satisfy the credit needs of their customers, would give banks a strong incentive to dispose of government securities and to expand private credit. Even though a multiple expansion of credit would not be possible on the basis of any additional reserves acquired in this way, a one-to-one shift from government securities to loans could produce a substantial increase in total loans and deposits, given the huge amount of government securities held by banks in this country.

The obvious advantage of a deposit-expansion reserve requirement is that it creates no hardships for banks whose deposits and reserves have not increased. Nevertheless, it is best suited for use as a temporary measure; its use over a long period could rarely avoid giving rise to either inequities or administrative difficulties, or both. In any country, some banks grow more rapidly than others, partly because they provide better service and partly because they are located in more rapidly growing communities. If a supplementary deposit-expansion reserve requirement remained in effect for a period of more than a couple of years, the quotas of the individual banks would have to be adjusted. Otherwise, growing banks would be discriminated against and mature or declining banks would be favored, because the latter would be subject to lower average reserve requirements than would the former.

There are a number of methods which could be used for the purpose of adjusting quotas. One of them, for example, would be to make a bank's quota equal to the average amount of its deposits over the preceding twelve months.

The more successful the adjustments in quotas are in eliminating inequities, the more frequent they will have to be and, if scientifically planned, the more complex will be the administrative problems of applying them. This would be especially true in a country which has a very large number of banks, such as the United States. In countries with only a few banks, the administrative problems would be more easily manageable.

The advantages and disadvantages of reserve requirements which permit certain kinds of earning assets to be counted as reserves

In Europe, as has already been noted, several countries permit or require banks to include government securities among their required reserves. The purpose of these requirements is to prevent banks from disposing of such securities in order to purchase longer-term government securities or to expand credit to private borrowers. They also serve to compel banks to invest at least a part of any increase in their deposits in such securities.

In circumstances in which central bank or government operations are not increasing the deposits and cash reserves of the banking system, the effectiveness of a securities-reserve plan in limiting bank credit expansion will depend on how far the requirement impinges on the working liquidity position of the banks. This, in turn, will depend on: (1) the amount of reserve-eligible government securities banks hold inexcess of those immobilized by the reserve requirement; (2) the ability of the banks to sell such excess holdings to the central bank without loss; (3) the extent of the statutory authority of the central bank to impose still higher reserve requirements, and (4) the desire of banks to retain additional securities for general liquidity purposes and for purposes of easing the process of adjustment to any future increases in reserve requirements.

In circumstances in which the cash reserves of the banking system are increasing, a securities-reserve requirement will not reduce the size of the multiple deposit expansion which can take place on the basis of the additional cash reserves unless the supply of reserve-eligible securities available from sources other than the central bank is strictly limited. Otherwise, whenever the cash reserves of the banking system increased, the banks could expand their total reserve assets still further by buying reserve-eligible securities from the public.1/ In this event, any additional cash

1/ Purchases of reserve-eligible securities from the public by the commercial banking system would not reduce the cash reserves of the banking system (assuming no increase in currency in circulation);

reserves would have the same potential for a multiple deposit and credit expansion as would be the case if the only reserve requirement in effect were the provisions requiring certain minimum holdings of cash. There would be one important difference, however, and that is that part of the credit expansion, under a securities-reserve scheme, would have to be in the form of purchases of reserve-eligible securities from private holders instead of in the form of loans.1/ To the extent that banks held reserve-eligible securities in excess of the minimum requirements, however, the full expansion could take the form of loans. Thus, in periods in which the cash reserves of the banking system are expanding, a securities-reserve plan is not a substitute for open-market sales of securities to reduce the volume of bank reserves.

The observations made in the preceding paragraph are equally applicable to the use of reserve plans which permit certain types of

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consequently the total reserve assets of the banks would be enlarged by the amount of such purchases (provided that the proportion of reserve-eligible securities to cash reserves did not exceed the ratio permitted by the reserve requirements). On the other hand, purchases of reserve-eligible securities from the central bank would reduce the cash reserves of the banks by an amount equal to the securities bought, and the total volume of reserve assets would be unaltered.

1/ For example, if the banks had to hold required reserves of 20 per cent, of which at least half had to be held in cash and the rest of which could be held in government securities, an increase in the cash reserves and deposits of the banking system of $100 would then permit a maximum expansion of credit (and deposits) of $900, of which $100 would have to be in reserve-eligible securities acquired from sources other than the central bank and the remaining $800 could be in loans. If the securities portion of the requirement were dropped, and banks were made subject to only a cash reserve requirement of 10 per cent, then an increase in cash reserves and deposits of $100 would permit a maximum expansion of credit (and deposits) in the amount of $900, just as before. The only difference would be that in this case the entire expansion could take the form of loans.

loans or private securities to be counted as part of the required reserves of banks. The only factors which would limit the amount of credit expansion that could occur on the basis of additional cash reserves would be the size of the cash-reserve requirement and the possibilities of finding borrowers for credit of a reserve-eligible nature.

In underdeveloped countries, reserve requirements which permit certain kinds of "productive" loans to be counted as part of the required reserves of banks may be a useful instrument for increasing the availability of credit for such purposes and restricting the availability of credit for other purposes, but, as was indicated above, they are not a substitute for higher cash reserve requirements insofar as restricting the total volume of credit is concerned.

Advantages and disadvantages of a credit-expansion reserve requirement for purposes of selective credit regulation

A novel type of supplementary reserve requirement that has been suggested by some students of banking is one which would be related to increases in various categories of bank credit, instead of to deposits.1/ This would enable the central bank to have some

1/ A very interesting study of plans of this sort has been written by Wistar H. MacLaren, entitled The Selective Reserve Requirements Plan, submitted in partial fulfillment of the requirements of The Graduate School of Banking conducted by the American Bankers Association at Rutgers University, New Brunswick, June 1951. See also Monetary Policy and the Management of the Public Debt, Joint Committee on the Economic Report (Washington, D. C., 1952), Part 1, pp. 482-489, and The New York Times, April 22, 1951, letter to the editor, by Professor Jacob Viner.

influence over the availability of credit for specific purposes, which is something that cannot be accomplished by the traditional procedure of relating reserve requirements to deposits.1/

Under such a plan, banks would be required to hold a supplementary cash reserve, in addition to the usual required reserve against deposits, equal to prescribed percentages of any increases in their loans and investments. By establishing high requirements for some types of loans and investments and low requirements for others, banks might be given an incentive to extend credit of the latter types in preference to the former.

The way in which bankers' preferences for various types of credit would be altered would be as follows. Let us suppose, for purposes of simplicity, that the central bank divides all bank credit into only two groups, A and B, and establishes a supplementary reserve requirement of 10 per cent against increases in credit of type A and 50 per cent against increases of type B. In these circumstances, a bank acquiring excess reserves of $1000 could extend $909 of credit of type A or $667 of type B.2/ Let us assume that the prevailing

1/ It has been brought to my attention by Mr. Lewis Dembitz that a reserve requirement against deposits designed so as to permit banks to include among their required reserves specified percentages of their holdings of various types of earning assets, could be made to yield much the same results as a plan which related required cash reserves to categories of earning assets.

2/ Assuming that the proceeds of the loan are entirely withdrawn from the lending bank, a type A loan of $909 would involve an increase in required reserves of $91 and a loss of cash of $909, thereby using up the $1000 of excess reserves. A type B loan of $667 would involve a loss of cash of the same amount and an increase in required reserves of $333, thereby using up $1000 of excess reserves.

rate of interest on type A credit is 3 per cent. Then, if the rate of interest on type A credit remains unchanged at this level, the rate of interest on type B credit would have to rise to approximately 4.1 per cent or else the amount of interest the bank could earn on its permissible volume of loans of this type would not be as great as the amount it could earn on type A credits.1/ Or, to put the matter more precisely, the spread between the rates of interest on the two types of credit would have to widen so that the yield on type B was greater than that on type A by 36 per cent.2/

If demand for credit of type B were strong, a plan of this sort might not prevent banks from increasing their loans of this type, unless the differences between the supplementary reserve ratios were very great. Nevertheless, this much would have been achieved: a given amount of reserves would not go as far in expanding the total volume of credit. The reason for this is that in the process of acquiring assets of the sorts subject to high supplementary reserve requirements, at the expense of assets subject to low requirements, the banks would raise the average level of the ratio between

1/ Three per cent of \$909 = \$27.27; 4.1 per cent of \$667 = \$27.35.

2/ If r_1 is the rate of interest on type A credit, and r_2 the rate of interest on type B credit, then the two types of credit will yield the same return if $909(r_1) = 667(r_2)$. In this case, $\frac{r_2}{r_1} = \frac{909}{667}$, and

$$\frac{r_2 - r_1}{r_1} = \frac{909}{667} - \frac{r_1}{r_1}; \quad \frac{r_2 - r_1}{r_1} = \frac{909}{667} - 1 = .36$$

their total reserves and their deposit liabilities, with a consequent reduction in the expansion potential of the banking system. One of the advantages of a credit-expansion reserve plan, in fact, is that the total volume of credit could be restrained by applying pressure, in the form of high reserve requirements, against certain types of credit for which demand is very inelastic with respect to the rate of interest.

To some extent, the reaction of bankers to a discriminatory reserve plan of this sort might be to tighten the availability of credit of sorts subject to high supplementary reserve requirements, instead of merely raising the rate of interest on such loans. In some circumstances, moreover, competition from non-bank lenders might act as a drag on upward changes in interest rates, even if banks were disposed to raise rates on types of credit subject to high reserve requirements to levels which would offset the difference in reserve requirements. To the extent that the interest rate on loans of this sort failed to rise sufficiently to offset the differences in reserve requirements, bankers would have an incentive to try to expand credit of the types subject to low requirements.

If this latter kind of reaction were very strong, the expansion in the total volume of credit might pose a serious inflationary problem.

The uncertainty as to how banks would revise their lending policies under a selective credit-expansion reserve plan would make it difficult for the monetary authorities to forecast what the qualitative and quantitative effects would be and they would have to proceed on a trial and error basis. The more highly selective the requirements were made, the harder it would be to forecast the probable results of any given structure of asset-reserve ratios.

In conclusion, it should be pointed out that no country has yet introduced a selective credit-reserve plan of this sort, although a proposed central bank bill presently under consideration in Paraguay does authorize the central bank to impose such a reserve requirement. Consequently, there is no experience by which to judge its value and its limitations in actual practice. In some circumstances, it might prove a useful instrument if properly used.

TABLE 1. Reserve Requirements Against Domestic Deposit Liabilities of Commercial Banks

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
Argentina	None		All deposits are held for the account of the central bank, which is subject to no reserve requirement against its deposit liabilities. The central bank provides each commercial bank with cash equal to at least 10 per cent of the deposits it holds for the account of the central bank. Any additional loanable funds must be obtained by rediscounting with the central bank.
Australia	(see remarks)		Reserve requirements are related to increases in total assets, and reserves must be held in special deposit accounts with the central bank. There is no reserve requirement against deposit liabilities. The amount each bank is required to maintain in the special account is based upon the current excess of its total domestic assets, including balances in the special account, over and above the level of total assets in August 1939. The central bank is empowered to regulate and vary the amount that must be maintained in the special account.
Austria	(see remarks)		In accordance with a voluntary agreement between the commercial banks and the central bank in May 1951, commercial banks maintained reserves in cash or government securities amounting to 25 per cent of deposit liabilities until December 31, 1951. After that date the reserve ratio was increased to 30 per cent, with a provision that a minimum of one-third of the total reserves be held in the form of cash items.
Belgium	4 50 to 65		Banks are required to maintain a cash reserve equal to at least 4 per cent of their deposit liabilities and a reserve of government securities ranging from 50 to 65 per cent of their deposit liabilities. The largest banks are subject to a securities reserve requirement of 65 per cent. Middle-sized and small banks are subject to requirements of 60 per cent and 50 per cent respectively. Reserve requirements are fixed by the Banking Commission.
Bolivia	20	10	At least 4/5 of the required reserve must be in the form of a deposit with the Monetary Department of the central bank. The remaining 1/5 may take any of the following forms: deposits with Banking Department of the central bank; gold coins of Bolivia, Great Britain, Peru, or U. S.; notes of the central bank; and Bolivian silver coins (provided that such coins do not exceed 10 per cent of total reserves). The reserve requirements may be changed by Cabinet decree initiated by Minister of Finance, or by law.
Brazil	18 (see remarks)	12	Demand deposits are defined as those subject to withdrawal upon demand or with notice of no more than 90 days; time deposits are defined as those subject to

TABLE 1. (continued)

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
			withdrawal only after 90 days notice. The reserve requirement is divided into two parts. First, banks must hold reserves equal to 3 per cent of demand deposits and 2 per cent of time deposits (as defined above) in the form of deposits with the Bank of Brazil for the account of the Superintendency of Money and Credit. Up to half of this required reserve, however, may take an alternative form of depositing government securities with the Bank of Brazil in the name of the Superintendency. The Superintendency of Money and Credit is empowered to alter the reserve requirements and to set them within limits of 2 per cent and 14 per cent in the case of demand deposits, and of 1 per cent and 7 per cent in the case of time deposits. In addition to the foregoing requirements, banks must also hold cash reserves equal to 15 per cent of demand deposits and 10 per cent of time deposits, after deducting from their deposit liabilities the amounts deposited with the Bank of Brazil for the account of the Superintendency, as indicated above.
Canada	5		Required reserves may be held in the form of deposits with the central bank or in notes issued by the central bank.
Ceylon	14	5	Reserves ordinarily must take the form of deposits with the central bank, but in special circumstances, the central bank may permit the maintenance of part of the required reserves in the form of assets other than deposits with the central bank. The central bank fixes the reserve ratios applicable to each class of deposit liabilities. The ratios so prescribed may not be less than 5 per cent or more than 20 per cent in the case of time (including savings) deposits, and may not be less than 10 per cent or more than 40 per cent for demand deposits and unused balances of overdraft lines. In addition, the central bank may, during periods of inflation or when inflation is anticipated, prescribe supplementary reserve requirements of up to 100 per cent against increases in deposit liabilities, but in such cases the central bank must pay interest on any reserves required in excess of the normal maxima for demand and time deposits. The rate of interest paid on such reserves may not exceed the lowest prevailing discount rate of the central bank.
Chile	20	8	The General Banking Law of 1925 specified that required reserves should consist of deposits with, and notes of, the central bank, Chilean gold coins, and Chilean silver and nickel coins, but holdings of silver and nickel coins could not exceed 10 per cent of the total reserve. Subsequent laws have made numerous exceptions, so that up to 4/5 of total required reserves can now take the form of specified types of loans and securities, provided that such loans and securities do not exceed 25 per cent of the bank's capital and surplus accounts.

TABLE 1. (continued)

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
			The central bank, with prior approval of the President, may reduce reserve requirements by not more than 25 per cent. Commercial banks, under Law 4272 of 1928, are permitted to hold smaller reserves of 15 per cent against demand deposits and of 6 per cent against time deposits, provided their interest or discount rate does not exceed that of the central bank by more than 2-1/2 per cent.
Colombia	15 (see remarks)	5	The board of directors of the central bank on January 11, 1952 announced an increase in reserve requirements against demand deposits from the existing level of 12 per cent to 15 per cent, to take effect by an increase of 1/2 per cent monthly over the six-month period beginning January 31, 1952. In addition, each bank must hold reserves of 40 per cent against any increases in its demand deposit liabilities above the amount outstanding on January 11, 1952.
			Cash in vaults may comprise up to 1/5 of the required reserve, but any fractional currency included may not exceed 2 per cent of the total required reserve. The rest of the reserve must be held on deposit with the central bank.
			The central bank may raise or lower the required reserve ratios within a range of 10 per cent to 30 per cent for demand deposits and of 5 per cent to 20 per cent for time deposits, but the Minister of Finance, who is a member of the central bank board, is empowered to veto any proposed change in reserve requirements.
Costa Rica	20	10	Required reserves may consist of notes, coins (but coins may not amount to more than 1/10 of the reserve), deposits with the central bank, and certain mortgage bonds.
			The banking system of Costa Rica was nationalized in 1948. Present reserve requirements are the minimum established by law, but the central bank has unlimited power to increase reserve requirements and to change the composition of required reserves.
Cuba	25	20, 15	Time deposits (including savings deposits) are divided into two categories: deposits subject to withdrawal on 30 to 90 days notice, for which there is a 20 per cent reserve requirement; and deposits subject to withdrawal with a minimum of 90 days notice, for which there is a 15 per cent reserve requirement.
			Four-fifths of the required reserve must be held on deposit with the central bank and the rest may be held in the form of cash.

TABLE 1. (continued)

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
			The central bank may fix the reserve requirements for demand and time deposits within limits of 12-1/2 per cent to 40 per cent. In the case of savings deposits, however, the range is from 8 per cent to 40 per cent. The central bank may also impose a reserve requirement of up to 100 per cent against increases in deposits.
Denmark	3, 2, 1		Banks must hold a certain minimum ratio of cash items to total liabilities. The size of this minimum ratio varies according to the size of the bank's capital. Banks with more than 20 million kronor of capital must hold a cash reserve of 3 per cent; those with capital between 5 and 20 million kronor must hold a reserve of 2 per cent, and banks with a capital of less than 5 million kronor must hold a reserve of 1 per cent.
			For reserve purposes, cash items include balances payable on demand at domestic and foreign banks and balances with the Postal Clearing Office.
Dominican Republic	30	15	Required reserves may take the form of cash, demand deposits with the central bank, and government securities. Not more than half of a bank's holdings of government securities can be used to meet the reserve requirement however, and securities so used may not comprise more than 45 per cent of the total reserve. At least one-half of the required reserve, including the portion which is held in government securities, must be deposited with the central bank. The balance may be held as vault cash.
			The central bank may set reserve requirements within limits of 10 per cent and 50 per cent and may impose requirements of up to 100 per cent against increases in deposits.
Ecuador	25	15	Required reserves must consist entirely of deposits with the central bank.
			The central bank may set the requirements within a range of 10 per cent to 50 per cent. The central bank may also impose supplementary reserve requirements in excess of 50 per cent against increases in deposits during periods of strong inflationary pressure.
Egypt	(see remarks)		Banks are subject to no legal reserve requirements. During World War II, however, certain banks which engage in clearing operations agreed voluntarily to maintain a proportion of their demand liabilities in the form of cash and deposits with the National Bank. This proportion ranged between 15 per cent and 40 per cent.

TABLE 1. (continued)

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
El Salvador	20		At least one-half of the required reserve must take the form of a deposit with the central bank; the rest must consist of cash.
			Changes in reserve requirements can be effected only by legislative action.
Finland	None		
France	(see remarks)		Banks must hold a reserve in government securities equal to 20 per cent of any increase in deposits above the amount outstanding as of September 30, 1948. In case of a decrease in deposits below the base level reached on September 30, 1948, holdings of securities may be decreased by no more than 80 per cent of the decrease in deposits.
			Reserve requirements are fixed by the Bank of France, on advice of the National Credit Council, and in agreement with the Minister of Finance.
Germany	15, 10	8, 4	The reserve requirement against demand deposits is 15 per cent for banks located in Bank Places (places at which there is a Land Central Bank or branch) and 10 per cent for banks in non-bank places. A legal distinction is made between time and savings deposits, with the reserve requirement for the former being 8 per cent and for the latter 4 per cent, irrespective of the location of the bank.
			Required reserves must be held entirely in cash.
			The central bank has authority to prescribe the reserve requirements and the form in which required reserves are to be held.
Guatemala	25	10	Required reserves must consist entirely of deposits with the central bank.
			The law establishes 4 categories of domestic currency deposits ("monetary deposits," "short-term deposits," "long-term deposits" and savings deposits), and authorizes the central bank to fix different reserve ratios for each category, within limits of not less than 10 per cent or more than 50 per cent in each case. The central bank may, however, require banks to maintain reserves of more than 50 per cent and of up to 100 per cent against increases in deposits. In such an event, however, the central bank must pay interest on any reserves required in excess of 50 per cent of a bank's total deposits, at a rate not greater than 3 per cent a year.

TABLE 1. (continued)

<table>
<tr><th>Country</th><th>Demand deposits 1/
Per cent</th><th>Time deposits 1/
Per cent</th><th>Remarks</th></tr>
<tr><td></td><td></td><td></td><td>The central bank may also subject to reserve requirements any liability accounts similar to deposit liabilities (such as unused balances of overdraft lines, for example), and may fix the requirements within the limits established for deposit liabilities.</td></tr>
<tr><td>Haiti</td><td colspan="2">None</td><td></td></tr>
<tr><td>Honduras</td><td>25</td><td>15</td><td>Required reserves must consist of deposits with the central bank or of vault cash, in proportions determined by the central bank. At present, they must be maintained entirely on deposit with the central bank.

The central bank may set reserve requirements within a range of 10 per cent to 50 per cent. It may also impose requirements of up to 100 per cent against increases in deposits.

The central bank may also subject to reserve requirements other kinds of liabilities as well as deposits.</td></tr>
<tr><td>India</td><td colspan="2">20</td><td>Required reserves may consist of cash, gold, deposits with the central bank and certain approved securities. Of this reserve, however, scheduled banks are required to maintain deposits with the central bank amounting to at least 5 per cent of their demand liabilities and 2 per cent of their time liabilities. Non-scheduled banks are given the option of holding these percentages in deposits with the central bank or in vault cash.</td></tr>
<tr><td>Iran</td><td colspan="2">55</td><td>Required reserves must consist entirely of deposits with the central bank.</td></tr>
<tr><td>Iraq</td><td colspan="2">15</td><td>Required reserves must consist entirely of deposits with the central bank.</td></tr>
<tr><td>Ireland</td><td colspan="2">None</td><td></td></tr>
<tr><td>Italy</td><td colspan="2">(see remarks)</td><td>Banks are required to hold reserves equal to 20 per cent of that portion of their deposit liabilities which is in excess of 10 times their capital, or an amount equal to 15 per cent of their total deposits, whichever is smaller. These amounts are either to be invested in government or government-guaranteed securities deposited with the central bank or to be held in an interest-bearing blocked account with the central bank or the Treasury. In addition, 40 per cent of any increase in a bank's deposits above the level of October 1, 1947 must be set aside in a similar fashion until the bank's total reserves reach 25 per cent of its total deposits. From then on the percentage of any increase that has to be set aside falls to 25 per cent, so that</td></tr>
</table>

TABLE 1. (continued)

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
			eventually this ratio will become a uniform requirement for all banks. Reserve requirements can be changed by the Inter-Ministerial Committee for Credit and Savings.
Japan	None		
Korea	(see remarks)		Ordinarily, the entire required reserve must be held on deposit with the central bank, but the central bank may permit banks to hold up to one-quarter of their required reserve in the form of notes of the central bank. The central bank may set reserve requirements within limits of 10 per cent and 50 per cent. In period of pronounced inflation, however, the central bank may require banks to maintain minimum reserves of more than 50 per cent and up to 100 per cent against increases in deposits. In such case, the central bank may pay interest, at a rate which does not exceed the central bank's lowest discount rate, on that part of the required minimum reserves which exceeds 50 per cent of the total deposit liabilities of the individual banks.
Mexico	(see remarks)		A reserve requirement of 10 per cent for savings deposits is uniform for all banks, and must be held as a deposit with the central bank. A primary reserve requirement against demand and time (other than savings) deposits is applicable as follows: 50 per cent for banks in the Federal District; 45 per cent for banks in cities having central bank branches; and 40 per cent for banks located elsewhere. A certain minimum proportion of the deposit liabilities subject to the primary reserve requirement must be held on deposit with the central bank, as follows: 30 per cent for banks in the Federal District, and 20 per cent for other banks; the remainder may be held in the form of government securities and certain other types of loans and securities approved by the central bank for this purpose. Supplementary reserve requirements which relate reserves to increases in deposit liabilities have been put into effect since September 1949. There is a 100 per cent reserve requirement against deposit liabilities in excess of September 30, 1949 levels, of which 30 per cent for banks in the Federal District and 20 per cent for other banks must be held with the central bank. The remainder may be held in the form of government securities and certain other types of loans and securities approved by the central bank for this purpose. If a bank's deposit liabilities exceed the level outstanding on June 15, 1951, however, the entire 100 per cent

TABLE 1. (continued)

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
			required reserve must be maintained in the form of deposits with the central bank. For banks in certain agricultural districts, where there are marked seasonal fluctuations in loans and deposits, however, different base dates during 1951 have been established in order to pick the seasonal peak for deposits.
			The central bank may set reserve requirements within limits of 15 per cent and 50 per cent except in the case of savings deposits, where the range is 5 per cent to 20 per cent. The central bank may also alter the form in which required reserves must be held. Moreover, where "monetary and credit exigencies" dictate, the central bank may prescribe requirements higher than the upper limits mentioned, but only with respect to increases in deposits.
Netherlands	40		Required reserves may consist of Treasury bills and cash.
			In addition, banks are given the following option: (a) They may maintain a reserve of Treasury bills or cash equal to 90 per cent of the average of their holdings as of June 30, 1949 and December 31, 1949. A similar reserve, to the extent of 67 per cent, has to be established against increases in deposits. (b) Alternatively, banks may maintain the volume of their private credits at no more than 105 per cent of the level reached as of September 30, 1950.
			Reserve requirements are fixed by the central bank.
New Zealand	7	3	Required reserves must be held on deposit with the central bank. With the consent of the central bank, part or all of the reserve may consist of government securities or other securities in which the central bank is authorized to invest its own funds.
			Reserve requirements may be varied by the Governor of the central bank "acting with the authority of the Minister of Finance," but cannot be lowered to less than 7 per cent for demand or 3 per cent for time deposits.
Nicaragua	16	8	At least 1/3 of the required reserve must be held on deposit with the central bank. The rest may take the form of vault cash, and certain national certificates of indebtedness.
			Reserve requirements can be changed only by legislation. In special circumstances, however, the National Superintendency of Banks may permit reserves to be lowered to 12 per cent for demand deposits and to 6 per cent for time deposits.

TABLE 1. (continued)

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
Norway	20	5	Banks must hold reserves equal to at least 20 per cent of their demand liabilities or 5 per cent of their total deposit liabilities, whichever is greater.
			Required reserves must be held in the form of cash plus "liquid means". "Liquid means" include net balances with other banks, deposits with the central bank, securities issued or guaranteed by the government, municipal bonds, and the bonds of specified credit associations. The law does not require that any minimum percentage of total reserves be held in cash or balances with the central bank.
Pakistan	5	2	Required reserves must consist entirely of deposits with the central bank.
Panama	20	10	Required reserves must be held entirely in cash.
			Reserve requirements can be changed only by legislation.
Paraguay	30	25, 20	A legal distinction is made between time and savings deposits, with the reserve requirement being 25 per cent for the former and 20 per cent for the latter.
			Required reserves must consist entirely of deposits with the central bank.
			The central bank fixes the reserve requirements against deposits (including unused balances of overdraft lines) within a range of 10 per cent to 50 per cent. The central bank may, however, set reserve requirements higher than 50 per cent, and up to 100 per cent, against any increase of deposits above the level existing at the time such action is taken. In this case, however, the central bank may pay interest on that part of the required reserves which exceeds 50 per cent of the deposits of the banks, but the interest rate may not exceed the minimum rediscount rate of the central bank.
Peru	20	10	Required reserves may consist of the following: gold coin or bullion at a price based on the fine gold content in accordance with the Peruvian Monetary Law, deposits with or notes of the central bank, and silver and nickel coins provided that such coins do not exceed 15 per cent of total legal reserve.
			The Superintendent of Banks, at the request of the central bank, and with the permission of the Minister of Finance, may increase reserve requirements up to 30 per cent for demand deposits and 12 per cent for time deposits.
Philippines	18	5	The central bank has complete discretion to determine the form which required reserves shall take. At the present time, up to 5/18 of the required reserve

TABLE 1. (continued)

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
			against demand deposits may be held in government securities, and the remaining portion must consist of deposits with the central bank; the required reserves against time deposits may be held in the form of deposits with the central bank and/or in the form of government securities.
			The central bank may set reserve requirements within a range of from 10 per cent to 50 per cent for demand deposits, and from 5 per cent to 25 per cent for time deposits. In addition, the central bank may prescribe a supplementary reserve ratio of up to 100 per cent against increases in deposit liabilities. In such cases, however, the central bank may pay interest on any reserves required in excess of 50 per cent of a bank's demand deposits or in excess of 25 per cent of its time or savings deposits, but the interest rate may not be higher than the central bank's lowest rediscount rate. The central bank is also authorized to fix reserve requirements against unused balances of overdraft lines, and its powers in this connection are the same as those with respect to demand deposits.
Portugal	20	—	Required reserves consist of vault cash and/or deposits with other banks—not necessarily with the central bank.
South Africa	10	3	Required reserves must consist of deposits with the central bank.
Spain	None		
Sweden	6 to 10		Reserve requirements vary according to the capital of the bank. Banks with capital of over 50 million kroner must hold a reserve of 10 per cent; those with capital between 10 and 50 million kroner must hold a reserve of 8 per cent; and banks with a capital of less than 10 million kroner must hold a reserve of 6 per cent.
			Up to 60 per cent of the required reserve may be held in the form of government securities. The balance must be held as vault cash and/or deposits with the central bank, but deposits with the central bank must equal at least 10 per cent of the total reserve.
			The central bank, with the authorization of the government, may fix reserve requirements at any level not higher than 25 per cent.
Switzerland	(see remarks)		Reserves are required against current liabilities. Current liabilities are defined as all liabilities maturing within 30 days plus 15 per cent of all savings deposits and time deposits.

TABLE 1. (continued)

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
			Required reserves must be held in an amount equal to at least: (1) 2.5 per cent - when current liabilities do not amount to more than 15 per cent of total liabilities. (2) 3 per cent - when current liabilities are from 15 up to 20 per cent of total liabilities. (3) 4 per cent - when current liabilities are from 20 up to 25 per cent of total liabilities. (4) 5 per cent - when current liabilities are more than 25 per cent of total liabilities. Required reserves must consist of cash on hand, and demand deposits with the Swiss National Bank and the Post Office.
Thailand	10		A uniform reserve requirement is applicable to both time and demand deposits. Reserve requirements are determined by Royal decree, and reserves must be held as a deposit with the central bank.
Turkey	20		The required reserve may consist of cash and/or government securities. The reserve requirement may be changed only by legislation.
United Kingdom	(see remarks)		Banks are "expected" by the monetary authorities to maintain reserves in the form of cash and deposits with the Bank of England equal to at least 8 per cent of their deposit liabilities, even though there is no legal requirement to this effect.
United States	24, 20, 14 (see remarks)	6	At the present time (February 1952), reserve requirements against demand deposits for member banks of the Federal Reserve System are: 24 per cent for central reserve city banks, 20 per cent for reserve city banks and 14 per cent for country banks. The reserve requirement against time deposits for all member banks is 6 per cent. Reserve requirements applicable to banks not members of the Federal Reserve System are prescribed by State law and vary from State to State. Required reserves of member banks of the Federal Reserve System must be held on deposit with Federal Reserve banks. Required reserves of non-member banks consist largely of balances with other commercial banks. Vault cash is a required component of the reserve in only 11 States. In some States, specified kinds of securities may be counted as part of the reserve. The Board of Governors of the Federal Reserve System fixes the reserve ratios applicable to each class of deposit liabilities of member banks. The ratios prescribed for demand deposits may not be less than 13 per cent or more than 26 per cent in the

TABLE 1. (continued)

Country	Demand deposits 1/ Per cent	Time deposits 1/ Per cent	Remarks
			case of central reserve city banks, and may not be less than 10 per cent or more than 20 per cent for reserve city banks, and may not be less than 7 per cent or more than 14 per cent for country banks. The reserve requirement against time deposits may not be less than 3 per cent or more than 6 per cent for all member banks.
Uruguay	32	16	Required reserves may consist of gold, government securities, cash, or deposits with the central bank.
			The President of the Republic, on the advise of the central bank, fixes the reserve requirements on a quarterly basis.
Venezuela	15	8	At least 1/3 of the required reserves must be deposited in the central bank; the balance may be held in cash.
			The central bank may alter the reserve requirements only with the permission of the President of the Republic.

1/ Unless otherwise noted under "Remarks," demand deposits are those requiring less than 30 days notice of withdrawal and time deposits are those requiring more than 30 days notice.