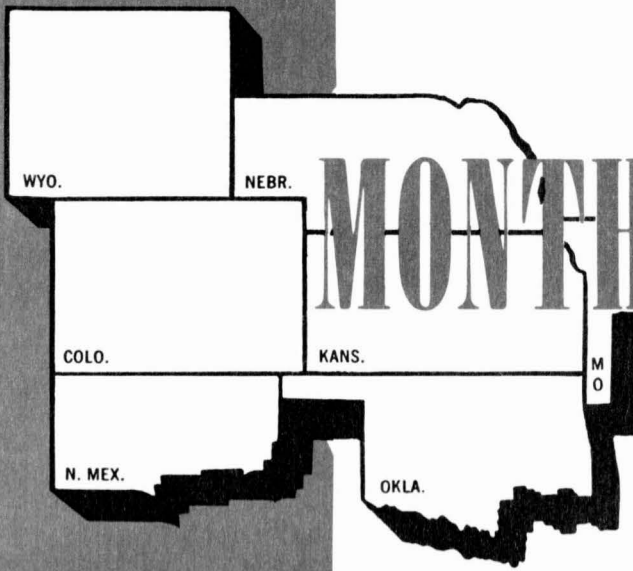


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BANK SIZE AND DEPOSIT VARIABILITY

By *Frederick M. Struble*
Carroll H. Wilkerson

SOME OF the findings obtained in an empirical study of deposit variability at member banks in the Tenth Federal Reserve District were reported in an article in the July-August 1967 issue of this *Review*. The evidence suggested that most District banks experienced a moderate decline in the variability of their total deposits between 1961 and 1966. The ratio of time and savings deposits to total deposits increased markedly over this six-year period, and this shift in composition appeared to be primarily responsible for moderating the degree of variation in total deposits. Support for this interpretation was provided by a further finding of the study which indicated that total time and savings deposits were subject to less fluctuation than total demand deposits in each year of this period. Year-to-year changes in deposit composition were not consistently reflected in the variability of total deposits, however. In four of the six years, the variability of total deposits remained essentially unchanged even though the ratio of time and savings deposits to total deposits increased each year.

The failure of total deposit fluctuations to decline more systematically with the increases in the proportion of time and savings deposits was attributable in part to coincident changes in the degree of variation of both demand deposits and time and savings deposits. Changes in the variability of each of these deposit categories tended to reinforce the effects of the change in deposit mix in some years and to offset the effects in others. In addition, it ap-

peared that the tendency for outflows from demand deposits to offset inflows into time and savings deposits, and vice versa, varied from year to year.

These findings have obvious implications for analysis attempting to appraise the relative degree of variation in total deposits at different banks over a given period of time. They indicate that comparatively high ratios of time and savings deposits in total deposits will *tend* to produce relatively low degrees of fluctuation in total deposits. At the same time, however, this evidence warns that dissimilarities in the proportion of time and savings deposits in total deposits at different banks may not provide an infallible indication of either the direction or amount of disparity in the variability of their total deposits. A bank with a high proportion of time and savings deposits may experience greater variability in its total deposits than another bank because (a) the variability of either or both its demand deposits and time and savings deposits may be relatively high and/or (b) the degree of synchronization between its demand and time and savings flows may be comparatively low.

Differences among banks in the variability of their demand deposits or time and savings deposits or in the degree of synchronization between variations in each of these deposit categories may arise for many different reasons. One of the most important of these may be the dissimilarities which exist in the composition of demand deposits and time and savings deposits at different banks. Diversity in the

composition of either of these deposit categories will tend to create different degrees of fluctuation, if some deposits comprising these broad categories tend to be more unstable than others. Disparities in the variability of total demand deposits or total time and savings deposits among banks may also exist because the variability of any subcategory of either may not be the same at all banks.

It is widely thought that dissimilarities in bank size give rise to systematic differences in the degree of total demand deposit fluctuations—and by implication in the degree of total deposit fluctuations. Opinions differ, however, as to whether the relationship between size and variability is direct or inverse. The more traditional view is that demand deposit variability tends to be higher at large banks. This hypothesis is based on the assumption that the composition of demand deposits at larger banks tends to produce higher degrees of variation. The alternative hypothesis, advanced more recently, is that conditions unique to large-scale banking tend to reduce the variability of the various categories comprising total demand deposits and therefore to increase the stability of these deposits. The findings of recent empirical investigations tend to support the latter hypothesis, although this evidence is far from sufficient to permit a conclusive resolution of this question.

A more detailed review of the alternative positions on the issue of bank size and deposit variability and of the recent empirical findings related to this issue will be presented in the next section of this article. Following this discussion, additional empirical evidence obtained from examination of deposit fluctuations at individual banks in the Tenth Federal Reserve District will be reviewed. These data reflect the relative stability of total demand deposits, total time and savings deposits, and total deposits at six size groups of banks. In addition, evidence indicating the degrees of variation in several subcategories of demand

deposits by size of bank is presented. This information, together with data reflecting differences in the composition of deposits at different sized banks, permits determination of whether the relationship between size and deposit variability is due to differences in deposit composition systematically associated with size, to differences not attributable to deposit composition, or to some combination of these two conditions.

CURRENT THINKING ON SIZE AND VARIABILITY

Traditionally the demand deposits of large banks were thought to be more unstable than those at smaller banks. This hypothesis was based primarily on the knowledge that the proportion of demand deposits due to other banks—deposits assumed to be subject to relatively high degrees of variation—in total demand deposits is generally greater at larger banks. Evidence indicating that the turnover rates of demand deposits are higher at large banks also has been offered in support of this conclusion, on the assumption that relative deposit turnover rates provide a good indication of relative deposit variability.

Neither of these arguments provides conclusive proof for this hypothesis, however. Deposit turnover rates—the ratio between total debits to a deposit category over some period and average deposit balance for this period—may give a misleading indication of relative deposit variability. The variability of a deposit category is determined not only by the magnitude and frequency of debits but also by the magnitude and frequency of credits. The more simultaneous are debits with credits, the lower will be the resulting degree of deposit fluctuation. Consequently, if debits and credits tend to be more closely synchronized as the turnover rate of deposits increases, it is possible that fluctuations in the level of these deposits may remain unchanged or may even decline.

The presumed effect of interbank deposits on the variability of total demand deposits also is subject to question on several grounds. First, the assumption that these deposits are more variable than other types of demand deposits has never been firmly established in empirical fact. Second, even if interbank deposits do vary more than other types of demand deposits, it does not follow necessarily that they will tend to increase the variability of total demand deposits. It is conceivable that interbank deposit fluctuations may be closely synchronized with fluctuations in other demand deposits; thus they may tend to reduce the variability of total demand deposits. Finally, it is possible that the variability of other types of demand deposits may be substantially lower at larger banks, sufficiently so to more than offset the effects of the higher proportions of interbank deposits.

It is this final possibility which is stressed primarily by those asserting that the variability of total demand deposits—and presumably the variability of total deposits—may be lower at larger banks than at smaller banks. Several conditions inherent in large-scale banking have been cited as capable of creating this inverse relationship. First, larger banks have a greater number of deposit customers and in most cases these customers receive their incomes from a wide number of different industries and occupations. As a result, there would appear to be a greater tendency for withdrawals by some depositors to be offset by the additions of other depositors, since seasonal, cyclical, and trend factors affecting different industries and occupations are less likely to coincide. Moreover, it is likely that the deposit customers of large banks are located in a wider geographic area and this should reduce the chance for natural catastrophes, such as drought, flood, hail, and tornadoes to affect coincidentally the economic fortunes of a large proportion of these depositors. Finally, it has been contended that the larger the size of a bank's

total deposits—particularly relative to the total deposits of all banks in a given area—the greater is the probability that funds will flow among its deposit accounts. That is, a check drawn on one account in the bank is more likely to be deposited in another account in the same bank.

The results of recent empirical studies of deposit fluctuations at different sized banks suggest that the variability of both total demand deposits and total deposits is inversely related to bank size, although the findings have not been entirely consistent. Gramley found that the variability of both total demand deposits and total deposits at large banks in the Tenth Federal Reserve District generally was below that at smaller banks over the period 1949-56. In a subsequent empirical investigation, Rangarajan obtained results which support Gramley's finding. He found that at a sample of banks in the Third Federal Reserve District in 1962 an inverse relationship existed between the variability of demand deposits and the size of these accounts. In contrast to these two studies, Fraser, in his examination of deposit fluctuations at a small sample of banks in the Eleventh Federal Reserve District in 1966, was unable to find any systematic relationship between size and deposit variability.¹

It is worth emphasizing that the findings of these studies do not necessarily contradict the assertion that greater proportions of interbank deposits at large banks tend to increase the variability of their total demand deposits. Instead, it is conceivable that this tendency

¹See Lyle E. Gramley, "Deposit Instability at Individual Banks," *Monthly Review*, Federal Reserve Bank of Kansas City, September 1957, pp. 3-7; reprinted in *Essays on Commercial Banking*, published by the Federal Reserve Bank of Kansas City, August 1962, pp. 41-55; C. Rangarajan, "Deposit Variability in Individual Banks," *The National Banking Review*, Vol. 4, No. 1, September 1966, pp. 61-71; and Donald R. Fraser, "A Note on Deposit Instability," *Business Review*, Federal Reserve Bank of Dallas, March 1967, pp. 3-7.

may be more than offset by lower degrees of variation in all deposit categories. An attempt to distinguish between these possibly conflicting tendencies will be made in the following sections of this article by comparing differences in the relative variability of different demand deposit categories and disparities in the composition of these deposits at various size groups of banks. A further question, which has not been extensively examined as yet, is the relationship between the variability of total time and savings deposits at banks of different size. This also will be considered.

DATA AND PROCEDURE

Fluctuations in weekly levels of total deposits and other major deposit categories occurring at member banks in the Tenth Federal Reserve District over the six-year period 1961-66 were measured in order to obtain the evidence to be presented.² The same technique was employed for measuring the variability of deposits at individual banks as that used in the previous study reported in the July-August *Review*. Since an extensive description of this procedure is provided in the earlier article, discussion of this technique will be kept quite short. Briefly, the procedure measures the average weekly fluctuation in total deposits (or in other deposit categories) which occurs over one year that can be attributed to all factors other than deposit growth.

This technique was used to obtain measures reflecting the weekly variation occurring on average over a year in total deposits and other relevant deposit categories at each bank included in this study. Indexes of the variability of each deposit category for each year at six groups of banks of different sizes were then constructed by averaging the relevant

variability measures obtained from individual banks. Inspection of the relationship between the index of variability of each deposit category and bank size indicated that the relationship was essentially the same in each year. This was particularly true for the relationship between the relative order of deposit variability and bank size. Since it is this relationship which is most pertinent to the question under discussion, the indexes for individual years were averaged to facilitate presentation and discussion of this evidence.

EFFECTS OF DEPOSIT SIZE AND DEPOSIT COMPOSITION ON THE VARIABILITY OF TOTAL DEMAND DEPOSITS AND TOTAL TIME AND SAVINGS DEPOSITS

Data reflecting the variability of three major demand deposit categories—U. S. Government deposits, deposits due to banks, and all other demand deposits—by size of bank (by size of total deposits) are presented in Table 1. This evidence clearly suggests:

1. These three deposit categories are subject to decidedly different degrees of variation.
2. The relative order of variation among these deposit categories—although not the relative magnitudes of differences—are the same at banks in the various size groups.
3. As the size of a bank increases, the variability of each of these deposit categories declines.

The inverse relationship between bank size and the variability of interbank deposits and "other" demand deposits is particularly apparent for, with two minor exceptions, each of these deposit categories systematically becomes more stable as bank size increases. An inverse relationship between the variability of U. S. Government demand deposits and bank size also is apparent between the lowest size class of banks and the \$10-\$24.9 million size class. Moreover, the variability of these deposits at the two largest size classes of banks

²Of the 836 member banks in the District, only those banks which were organized during the period and a few other banks subject to unusual conditions were not included in the study. Weekly deposit levels were based on daily average figures.

is below that measured at the two smallest size classes.

Taken together these findings suggest that the variability of total demand deposits will tend to be inversely related to bank size unless differences in demand deposit composition, systematically related to bank size, more than offset this tendency. The interaction of these two possible factors can be seen by examining Table 2. Measures of the variability of total demand deposits for the six groups of banks together with the ratios of U. S. Government deposits and interbank deposits to total demand deposits in these various groups are presented in this table. A generally inverse relationship between bank size and the variability of total demand deposits is observable, even though the proportions of the more variable deposit categories in total demand deposits systematically increase with bank size.

Examination of the differences between total demand deposit fluctuations in the \$10-\$24.9 million size group and the \$25-\$99.9 million size group will indicate one exception to this generalization. This exception appears to be attributable to the fact that the proportions of U. S. Treasury deposits and interbank deposits are greater at the larger size group of banks. It will be noted, however, that the variability of total demand deposits is lower at the \$25-\$99.9 million size group than at the three smallest size groups, despite the higher proportions of interbank deposits and U. S. Gov-

Table 2
VARIABILITY OF TOTAL DEMAND DEPOSITS
AND PRINCIPAL RATIOS BY SIZE OF BANK
(AVERAGE 1961-66)

Size of Bank	Variability	Ratio U.S.	Ratio
	of Total Demand Deposits	Government Deposits to Total Demand Deposits	Interbank Deposits to Total Demand Deposits
	(Per Cent)	(Per Cent)	(Per Cent)
Less than \$2 million	4.6	1.6	.7
\$2-\$4.9 million	4.5	1.9	.8
\$5-\$9.9 million	4.4	2.4	1.6
\$10-\$24.9 million	3.8	2.4	4.3
\$25-\$99.9 million	4.0	3.3	19.5
\$100 million and over	3.5	3.3	24.1

ernment deposits at the larger banks. Evidently, the lower variability of interbank deposits and "other" demand deposits, in particular, relative to that at the three smallest size groups had a sufficiently strong effect to more than compensate for the effects of the higher proportion of more volatile deposits at the larger banks.

The variability of total demand deposits at the largest size group of banks is substantially below that for the \$25-\$99.9 million size group—and, in fact, is lower than that for any other size group. This relationship is established even though the proportion of interbank deposits makes a further sharp jump from the immediately preceding size group. The substantially lower variability of interbank deposits at this largest size group of banks relative to that at the \$25-\$99.9 million size group appears to account in part for the failure of this shift in composition to have a more marked effect on the variability of total demand deposits. Moreover, as indicated in Table 1, the variability of "other" demand deposits at the largest sized banks is lower than at any other size group. In addition, the variability of total demand deposits at the largest size group of banks (Table 2) is below the variability of each component category of demand deposits at this size group (Table 1). This suggests that size may not only reduce the

Table 1

VARIABILITY OF MAJOR DEMAND DEPOSIT
CATEGORIES BY SIZE OF BANK

Average Weekly Per Cent Variation Per
Year, 1961-66

Size of Bank	U. S.		Other Demand
	Government	Interbank	
Less than \$2 million	36.5	21.0	4.5
\$2-\$4.9 million	32.0	16.2	4.4
\$5-\$9.9 million	25.6	19.1	4.3
\$10-\$24.9 million	24.4	14.7	3.8
\$25-\$99.9 million	31.2	14.0	3.8
\$100 million and over	28.6	7.6	3.6

Table 3**VARIABILITY AND COMPOSITION OF TOTAL TIME AND SAVINGS DEPOSITS BY SIZE OF BANK (AVERAGE 1961-66)**

Size of Bank	Variability of Total Time and Savings Deposits	Ratio Savings Deposits to Total Time and Savings Deposits
	(Per Cent)	
Less than \$2 million	3.2	54.1
\$2-\$4.9 million	2.2	56.7
\$5-\$9.9 million	1.8	64.3
\$10-\$24.9 million	1.6	71.1
\$25-\$99.9 million	2.1	68.7
\$100 million and over	2.5	67.3

variability of individual deposit categories but also may increase the degree of synchronization between outflows from one deposit category and inflows into another deposit category.

Banks of different size also appear to experience different degrees of variability in their total time and savings deposits. As indicated in Table 3, the variability of total time and savings deposits appears to be inversely related to bank size over the range of the four smallest size groups of banks. This inverse relationship may be entirely due to differences in the composition of these deposits rather than to systematic differences in the variability of time deposits and savings deposits at banks of different size. That is, savings deposits are generally thought to be subject to less fluctuation than time deposits,³ and the systematic increase in the ratio of savings deposits to total time and savings deposits over the four smallest size ranges of banks may account entirely for the decline in the variability of total time and savings deposits. However, the

variability of total time and savings deposits is half as great at the \$10-\$24.9 million size group as at the smallest size class of banks while the ratio of savings deposits to total time and savings deposits at the larger size class of banks is only about 30 per cent above that for the smallest banks. Thus there is some reason to conclude that the drop in variability is caused not only by differences in composition but also by differences in the variability of either or both time deposits and savings deposits between these different size banks. The possible moderating influence of size on the variability of each of these subcategories of time and savings deposits is far from entirely indicated by the data, however.

The relatively higher variation in total time and savings deposits in the two largest size groups which have only moderately lower ratios of savings deposits to total time and savings deposits would if anything suggest that size increases variability. On the other hand, there is no apparent reason to believe that size, per se, should affect the variability of either time deposits or savings deposits in a different manner than it affects the variability of the various subcategories of demand deposits. The most plausible explanation would appear to be that size alone does tend to reduce the variability of each, but that other conditions confronting larger banks are sufficiently strong to more than offset the effects of the greater number of time and savings deposit customers. One of these conditions is that the very largest banks account for most of the dollar volume of certificates of deposit in denominations of \$100,000 and over, deposits which, on the basis of recent empirical findings, appear to be subject to greater variability than other types of time and savings deposits. In addition, it may be that depositors at large banks are more sensitive to alternative investment opportunities and, as a consequence, shift their resources more actively between bank deposits and other forms of investment.

³See the article, "Deposit Variability at Commercial Banks," in the July-August issue of this *Review* for a discussion of this supposition and a review of the evidence supporting it. It was impossible to derive estimates of the variability of time deposits and savings deposits at different sized banks because, until quite recently, deposit data supplied by District member banks did not distinguish between the various subcategories of time and savings deposits.

EFFECTS OF DEPOSIT SIZE AND DEPOSIT COMPOSITION ON TOTAL DEPOSIT VARIABILITY

The evidence presented in the two preceding sections of this paper supports the following generalizations: (a) total demand deposits are more variable than total time and savings deposits at banks in all size groups; (b) the variability of total demand deposits tends to decline systematically as bank size increases; and (c) while the relationship between bank size and the variability of total time and savings deposits appears to be inverse over the range of the four smallest size groups of banks, variability of these deposits appears to be relatively high at the two largest size groups of banks. For easy reference, the data on which these generalizations are based are represented in Table 4, along with data reflecting the variability and composition of total deposits by size of bank.

A generally inverse relationship between the variability of total deposits and bank size is clearly observable in this evidence. Over the range of the four smallest size groups of banks the effects of differences in size and in deposit composition appear to reinforce each other—as bank size increases, the variabilities of demand deposits and time and savings deposits systematically decline as does the ratio of demand deposits to total deposits. On the other

hand, these factors appear to counteract each other in the larger size classes. That is, the moderating effects of size on the variability of total demand deposits appear to be offset in part by the greater proportion of these deposits in the total deposits of larger banks. The relatively higher variability of total time and savings deposits at larger banks also contributes to this moderating tendency. For example, the higher ratios of demand deposits to total deposits in the two largest size groups account at least in part for the greater variability of total deposits in these size classes than in the \$10-\$24.9 million size group. Overall, however, the generally lower variability of total demand deposits at these larger banks tends to be predominant. The variability of total deposits at both the \$25-\$99.9 million and over \$100 million size classes of banks is below that for the three smallest size groups.

SUMMARY

The evidence presented in this study tends to support the hypothesis that total demand deposits and total deposits are more stable at larger banks. Exceptions to this inverse relationship between bank size and deposit variability appear to be explainable primarily in terms of a divergence in the composition of deposits at different sized banks. Interbank demand deposits were found to be subject to a relatively high degree of variation, a finding which suggests that the greater proportion of these accounts in the total demand deposits of larger banks does tend to make their total demand deposits more unstable. Thus the logic behind the traditional view that demand deposits are more variable at larger banks appears to be correct up to a point. However, this hypothesis fails to consider the possibility that the variability of each deposit category composing total demand deposits may decline as they increase in size and decline sufficiently to more than offset the effects of the more volatile composition of deposits at large banks.

Table 4

VARIABILITY AND COMPOSITION OF TOTAL DEPOSITS BY SIZE OF BANK (AVERAGE 1961-66)

Size of Bank	Variability of Total Demand Deposits	Variability of Total Time and Savings Deposits		
		Total Time and Savings Deposits	Ratio Demand to Total Deposits	Variability of Total Deposits
		(Per Cent)		
Less than \$2 million	4.6	3.2	72.8	3.6
\$2-\$4.9 million	4.5	2.2	68.0	3.1
\$5-\$9.9 million	4.4	1.8	65.3	2.9
\$10-\$24.9 million	3.8	1.6	63.7	2.5
\$25-\$99.9 million	4.0	2.1	67.4	2.7
\$100 million and over	3.5	2.5	74.1	2.7

The Balance of Payments Adjustment Problem

By Thomas E. Davis

MOST MAJOR industrial countries today have a common desire to achieve a number of economic policy goals and objectives, such as full employment, a steady rate of economic growth, and relatively stable price levels. At the same time, these countries also seek to avoid prolonged imbalances in their international payments positions and to achieve a maximum degree of freedom in their international trade relations. The simultaneous attainment of all these policy objectives, however, has proven to be a difficult task and has presented policymakers and theoreticians alike with a number of difficult problems. One of these problems is the balance of payments adjustment problem. Broadly defined, this is the problem of avoiding major and persistent imbalances in the external positions of countries in a manner that is simultaneously consistent with the attainment of other economic policy objectives and in harmony with the policy objectives of other countries.

The balance of payments adjustment problem, of course, has been a subject of concern to many countries for a number of years. However, this problem recently has received increasing attention as an outgrowth of efforts to examine and appraise the viability of the

present international monetary system.¹ As a result of these efforts, it has become widely accepted that the avoidance of persistent payments imbalances is a prerequisite to a soundly functioning international payments system. It is recognized, for example, that if countries experience persistent deficits in their international payments they may not only impose a burden on the real resources and monetary stability of other countries, but may, through the process of financing the deficits, contribute to inflationary pressures in the world. Conversely, if countries experience persistent surpluses in their external positions, they may, through the process of accumulating international reserves, induce other countries to impose deflationary measures domestically and restrictive practices internationally. The continuation of such payments disequilibria clearly would be prejudicial to the stability of foreign exchange rates, the future growth of inter-

¹See, for example, *Ministerial Statement of the Group of Ten and Annex Prepared by Deputies*, August 1964; *The Communiqué of Ministers and Governors and Report of Deputies*, July 1966; *The Balance of Payments Adjustment Process*, A Report by Working Party No. 3 of the Economic Policy Committee of the OECD, August 1966; and Fellner, Machlup, Triffin and others, *Maintaining and Restoring Balance in International Payments*, 1966.

national trade, and would threaten confidence in the payments system as a whole.

Recent interest in the adjustment problem also has developed out of current efforts to insure that within the framework of the present international monetary system an adequate supply of international monetary reserves will be created in the future to properly finance payments imbalances.² As a result of these efforts, it has been recognized that the speed and efficiency by which payments imbalances are adjusted is closely interrelated with the amount of needed international reserves. For example, if payments adjustments work rapidly, less international reserves will be needed than if the adjustments work slowly. Viewed alternatively, if an excessive amount of reserves are created, countries might be encouraged to delay or forego needed payments adjustments; whereas, if an insufficient amount of reserves are created, countries might be forced to unduly accelerate adjustments that could cause undesirable disturbances to their domestic and international economies. As a result of this interrelationship between reserve creation and payments adjustments, interest has been stimulated in the adjustment process itself and in ways in which the adjustment process might be improved.

In view of this recent interest, the intent of this article is to discuss some of the major issues involved in the balance of payments adjustment problem and to review some of the economic policy measures that have been suggested to cope with the problem.

²At the Annual Meeting of the International Monetary Fund (IMF) in September 1967, a resolution was adopted to prepare an Amendment to the IMF Articles of Agreement that would authorize the IMF to create a new international reserve facility. Under this Amendment, which will be submitted eventually to members of the IMF for ratification, the new facility is to take the form of special drawing rights, and is intended to meet the need, as and when it arises, for a supplement to existing international reserve assets.

MECHANISMS OF ADJUSTMENT

It is widely accepted today that to achieve a fundamental adjustment of balance of payments disequilibria it is necessary for money incomes, costs, and prices in deficit countries to fall relative to those in surplus countries. This will lead in turn to a reallocation of productive resources in the export and import-competing industries of the countries concerned necessary to correct the disequilibria. The adjustment can be brought about either by a change in foreign exchange rates of the countries concerned or by a change—in the appropriate direction—in the absolute levels of money incomes, costs, and prices in the respective countries.

The classical gold standard often is cited as the system in which this process of adjustment occurred automatically. Under the “ideal” gold standard, characterized by fixed foreign exchange rates and flexible prices and wages, gold flows resulting from payments imbalances would automatically reduce the money supply in deficit countries and increase the money supply in surplus countries. This in turn would induce a reduction in incomes, prices, and costs in deficit countries, and an expansion in incomes, prices, and costs in surplus countries. These changes in incomes and costs usually would be accompanied by changes in interest rates, initiated automatically by international gold flows and supported by domestic monetary policies. In deficit countries, interest rates would be increased to further dampen economic activity and to attract an inflow of foreign capital, the latter serving to temporarily finance the deficits. In surplus countries, on the other hand, interest rates would be decreased to stimulate total spending and to encourage an outflow of capital.

The inadequacies of the classical gold standard became evident in the interwar period when many countries simultaneously were faced with massively depressed levels of eco-

conomic activity and employment. At the same time, countries also were confronted externally with large speculative and precautionary flows of international capital which undermined the stability of foreign exchange rates. These difficulties were compounded because the achievement of both external and internal equilibria under the gold standard was impeded by the tendency of prices and wages to be inflexible in the downward direction. Recognizing that the gold standard system was unworkable under these conditions, countries—out of concern for their own domestic economies—elected to abandon the system in the mid-1930's, leaving in its wake a rash of competitive devaluations and a web of restrictive measures on international trade and payments which continued in force until after World War II.

The present system of maintaining and restoring external equilibria, usually referred to as the gold-exchange standard, evolved out of the experiences of the 1930's and was formally incorporated into the Articles of Agreement of the International Monetary Fund (IMF) and the General Agreement on Tariffs and Trade (GATT) after World War II. While a number of improvements have been made in the system to adapt it to changes in postwar conditions, its essential aim remains that of facilitating external adjustments with the least impairment to the objectives of full employment, economic growth, freedom of international trade, and stability in foreign exchange rates. Under the system, the maintenance of external equilibria is entrusted primarily to four main instruments: (1) the use of gold, foreign exchange reserves, and drawings on the IMF to finance temporary payments imbalances; (2) the use of restrictions on capital flows when necessary to safeguard exchange rates, provided these restrictions do not impair payments for current account transactions; (3) the use of restrictions on imports, provided they are imposed in a nondiscriminatory manner in accordance with the provisions of GATT; and

(4) the right to change foreign exchange rates as allowed by the IMF for purposes of correcting fundamental payments disequilibria. The present system, therefore, is an attempt to preserve some of the better features of the gold standard, such as the relative stability of exchange rates, and at the same time to provide countries a greater degree of freedom from the automatic adjustment mechanism of the gold standard by allowing them to pursue domestic economic policies consistent with a minimization of restrictions on trade and payments.

Most observers would agree that the present system has worked quite effectively over the past two decades. The system's allowance for "controlled" changes in foreign exchange rates under conditions of fundamental disequilibria has, for instance, successfully avoided the competitive devaluations of the 1930's. Also, by encouraging a liberalization of trade and payments restrictions—particularly after the postwar transitional period—the system has greatly facilitated the rapid expansion in international trade and economic growth that has occurred in the world economy. The easing of trade restrictions also has contributed to the adjustment of payments imbalances. During the 1950's, for example, certain surplus countries in Western Europe found it more desirable to check their surpluses by lowering trade restrictions than by restraining domestic demand. Deficit countries benefited from these trade liberalizations and were able to adjust their positions with little or no restraint on their domestic economies. Aiding in the adjustment process during this period was the lack of any great pressure to rapidly correct payments imbalances, as most major surplus countries were seeking to build up their depleted international reserves, while the major deficit country, the United States, was willing to allow a reduction in its more than ample stock of net reserves by selling gold or by increasing its liabilities to foreign monetary authorities.

It should be emphasized that the effectiveness of the present system during the past several years also has been due partly to the continued tendency of payments imbalances to be automatically equilibrated. This automatic tendency operates as follows: A surplus on current account, for example, arising perhaps out of an increase in foreign demand for a country's exports, will tend to increase national income and domestic liquidity in the surplus country, and in turn generate a rise in that country's demand for imports—and a decrease in its allocation of resources to exports—so as to reverse the current account imbalance. Conversely, a payments deficit tends to dampen economic activity and reduce domestic liquidity in a deficit country, causing a decline in its demand for foreign goods and assets. It should be noted that the impact of this equilibrating mechanism varies widely among countries, depending upon, among other things, the size of a country's foreign transactions relative to its national income, the responsiveness of its exports and imports to changing economic conditions, and the differences existing between countries' financial and institutional arrangements. Despite the variability of its impact, however, the equilibrating tendency of payments imbalances is an important reason explaining why many countries through the years have not experienced larger deficits and surpluses relative to their total foreign transactions and national income.

Although the present system of adjusting international payments disequilibria has been quite effective in recent years, most observers also would agree that the system still is confronted with a number of difficulties. One of these difficulties is that if the automatic equilibrating tendency inherent in the system is allowed to operate fully, it may not only have an uneven impact on various countries, but more importantly it may run counter to domestic policy objectives of full employment, stable prices, and steady economic growth.

This would be the case for surplus countries, for example, unless there is sufficient scope in their economies to expand output and employment without incurring undesirable increases in their price levels. It also would be the case for deficit countries, unless the level of aggregate demand in their economies is excessive and endangering a sound rate of economic growth at reasonably stable prices. These fortuitous conditions, of course, are not always present. As a consequence, many countries have found it necessary to adopt economic policy measures to offset or retard the automatic equilibrating mechanism. Specifically, authorities in a deficit country sometimes may seek to offset the automatic reduction in economic activity and domestic liquidity resulting from a payments deficit by employing expansionary monetary and fiscal policies designed to increase employment and output. On the other hand, authorities in a surplus country sometimes may elect to "sterilize" the liquidity and income effects of a payments surplus by adopting contractionary monetary and fiscal policies to prevent an unsustainable rise in economic activity and an upward movement in prices. The adoption of these offsetting policy measures, however, while perhaps warranted in view of various domestic conditions and objectives, has made it more difficult for international payments disequilibria to be adjusted by relative changes in incomes, costs, and prices.

A further difficulty confronting the present system is that today, even more than in the 1930's, prices and wages in most industrial countries tend to be largely inflexible in the downward direction. One of the consequences of this downward inflexibility in prices and wages is that it has made the correction of payments imbalances through absolute declines in the levels of prices and wages highly unlikely. Another consequence is that no country today is likely to restrain a nonexcessively high level of domestic economic activity in order to cor-

rect a payments deficit, since with money wage rates irreducible, a decline in economic activity tends to cause an increase in unemployment. To be sure, adjustments of deficits are still possible under these conditions, provided prices and wages increase more rapidly in surplus countries than in deficit countries. However, surplus countries may not be willing to see or allow their prices and wages to increase, nor may market forces in surplus countries be conducive to such increases if their economies are characterized by less than full employment conditions. Thus, at times, deficit countries may be faced with the undesirable task of making payments adjustments that might conflict with their full employment objectives.

The constraints imposed on the present adjustment process by the tendency of prices and wages to be downwardly inflexible need not necessarily, however, preclude equilibrating adjustments being made through changes in prices and costs. It often has been pointed out, for example, that if average labor productivity in deficit countries is increased faster than average money wage rates, labor costs per unit of output can decline without increasing unemployment. And, by virtue of this reduction in unit labor costs, it might thereby be possible for deficit countries to achieve some reduction in their average prices. A variation of this theme, although a less desirable one from the standpoint of achieving adjustment, is when labor productivity and money wage rates in deficit countries increase at the same pace, serving to hold unit labor costs constant. In this case, however, the likelihood of price reductions in deficit countries is reduced considerably. A third alternative is when prices, wage rates, and costs increase in deficit countries, but at a slower rate than in surplus countries. This alternative is perhaps the least desirable because it involves adjusting payments imbalances by means of differential rates of inflation between countries. In brief, then,

while the downward inflexibility of prices and wages does not represent an absolute impediment to the adjustment process, it does pose difficult and sometimes undesirable alternatives. It also has the important implication that if payments adjustments are to be achieved through relative changes in prices and wages, these adjustments are very likely to proceed at a comparatively slow pace.

Another source of difficulty often pointed out as confronting the present adjustment process is the growing tendency in many countries today to regard their foreign exchange rates as immutably fixed. Contributing to this tendency is the view that a devaluation by a country should be strongly resisted because it represents a blow to that country's financial prestige and a threat to future confidence in its currency. By the same token, an upward revaluation by a country also is likely to be strongly resisted because of the adverse repercussions a revaluation is likely to have on that country's export and import-competing industries. Also contributing to the tendency of fixity in exchange rates is the possibility that large destabilizing speculative and precautionary capital flows will occur in anticipation of, and perhaps as a consequence of, changes in foreign exchange rates. Paradoxically, the removal of many restrictions on capital movements since 1958, while undeniably resulting in a better allocation of capital throughout the world, has increased substantially the scope for these capital flows. To be sure, many cooperative efforts between countries have been made in recent years to moderate the impact of these destabilizing capital movements, such as the network of currency swap agreements established by central banks of countries.³ Nonetheless, it often is claimed that the desire to avoid these capital flows has increased the

³For a discussion of these swap agreements, see "Treasury and Federal Reserve Foreign Exchange Operations," *Federal Reserve Bulletin*, September 1967.

emphasis on the need to avoid changes in foreign exchange rates.

Frequent and excessive changes in foreign exchange rates are, of course, recognized as undesirable from the standpoint of maintaining stability in international trade and payments. It is also of recognized importance that reserve-currency countries, such as the United States, maintain the values of their currencies in order not to jeopardize the stability of the present international financial system. It should be recalled, however, that under the provisions of the IMF, occasional changes in exchange rates are permitted in order to correct a fundamental payments disequilibrium. Hence, to the extent that this provision is used too sparingly, particularly by nonreserve-currency countries, the adjustment process tends to be denied an important instrument by which payments imbalances can be corrected.

In view of these and other difficulties, most informed observers have concluded that improvements can and should be made in the present system of adjusting international payments imbalances.⁴ Some of the economic policy measures which have been suggested to achieve this improvement are reviewed in the following section.

POLICY PRESCRIPTIONS

In a dynamic world economy, periodic imbalances in the international payments position of countries are bound to occur. Some of these imbalances, of course, are likely to be temporary or seasonal in nature, and will not warrant corrective changes in economic policies, incomes, costs, and prices. Other imbalances, however, are likely to be of a more per-

sistent and fundamental nature. Therefore, it is essential for policymakers to be able to distinguish properly between these two types of imbalances. Toward that end, the United States and other member countries of the OECD have recently established an "early warning system." This system is designed to improve the collection, quality, and analysis of relevant statistical information and to facilitate consultations between member countries whenever it is believed necessary to change or adopt economic policy measures for international payments purposes.⁵

The need to identify impending or actual payments imbalances of a nontemporary nature, however, is only a prelude to the more difficult task of prescribing appropriate policy measures to correct the imbalances. Complicating the task of prescribing policy measures is that payments imbalances requiring adjustment are often caused by a wide diversity of factors, such as changes in productivity, alterations in the availability of raw materials, shifts in the demand for goods and financial assets, changes in a country's military and foreign aid obligations, etc. Despite the causal diversity of imbalances, it has often been found quite useful when prescribing policy measures to distinguish analytically between three common causes of imbalances. These common causes are: (1) inappropriate levels of aggregate demand; (2) inappropriate international competitive positions due to structural disparities in costs and prices; and (3) excessive outflows or inflows of capital, not supportable nor warranted by a country's current account and international reserve position. In distinguishing between these common causes, recog-

⁴These difficulties also have led some observers to conclude that the present system should be drastically altered to achieve a greater degree of automaticity in the adjustment process. Those taking this view usually advocate either a return to the gold standard system or the establishment of a system of flexible foreign exchange rates.

⁵Many of the policy measures reviewed in this section, as well as the agreement to establish an "early warning system," are discussed more fully in: *The Balance of Payments Adjustment Process, A Report by Working Party No. 3 of the Economic Policy Committee of the OECD*, August 1966.

dition is given, of course, to the fact that other causes of imbalance sometimes do exist and that, in practice, two or more of these common causes often are operative at the same time. It also is recognized that even though it is possible to identify properly the cause of an imbalance, it may not be expedient nor desirable in some cases to treat the cause directly through the application of policy measures. For example, if a country's payments position has moved into surplus because its competitive position has improved as a result of an increase in productivity and lower costs, it would clearly not be desirable for that country to impose restrictions on further increases in productivity in an attempt to reduce its surplus. Given these exceptions, though, the identification of payments imbalances according to their common causes has proven to be a particularly useful device both for determining appropriate policy measures and for judging the probable duration of the imbalances.

In the case of payments imbalances due to inappropriate levels of aggregate demand, the recommended policy measures generally are considered to be quite straightforward. Since, by definition, aggregate demand is either excessive or deficient, it is clear that both monetary and fiscal policies should be employed to restore aggregate demand to a level that is appropriate with external balance. For example, when a country runs a payments deficit due to excessive demand pressures, monetary and fiscal policies should act to restrain domestic demand. Conversely, when a country experiences an external surplus and at the same time suffers from unemployment, as did the United States in the 1930's, the appropriate remedy is an expansion of domestic demand by monetary and fiscal policies. Since in both of these cases there is no apparent conflict in the prescription of policies to achieve both internal and external balance, the problem of payments imbalances resulting from inappropriate levels of demand often is cited as

being a "simple" case from the standpoint of prescribing policy measures.

It should be emphasized, however, that a "simple" case of an external deficit due to excessive demand conditions may readily deteriorate into a more difficult situation as soon as demand conditions cause prices and wages to increase. If this occurs, it then becomes more difficult to treat the cause of the imbalance through policies aimed at restraining aggregate demand, because the application of such policies with wages downwardly rigid will tend to lead to an increase in unemployment. To avoid this situation, therefore, it is generally prescribed that whenever payments imbalances are due to excessive demand conditions, monetary and fiscal policies should be employed as soon as possible to reduce aggregate demand. And, as an obvious corollary to this prescription, it follows that all countries should endeavor to develop, improve, and make more flexible those monetary and fiscal policy instruments by which they are able to influence aggregate demand.

External imbalances associated with cost and price disparities, irrespective of whether they have been due to aggregate demand or structural changes, pose a more difficult task for policymakers. The remedy in this case is clearly for cost-price structures in deficit countries to fall relative to those in surplus countries. As indicated earlier, however, such an adjustment may create policy conflicts for deficit countries, which are experiencing slack demand and high unemployment conditions, and for surplus countries, which are unwilling to see or allow an increase in their price levels. Under these conditions, it is widely accepted that deficit countries should not be called on deliberately to sustain slack demand conditions for external purposes, nor should surplus countries be asked for the same reason to tolerate an increase in their price levels. In practice, though, surplus countries may not be able to prevent completely a rise in their

prices because of the equilibrating tendency of a payments surplus. And to the extent this occurs, external adjustments will be facilitated. A more desirable way for surplus countries to make adjustments would be, of course, by unilaterally reducing their restrictions on international trade and payments. Such actions would not only help correct their external surpluses, but also would serve to moderate upward pressures on their domestic prices. In the event that further remedial action is necessary, surplus countries then would be advised to make upward revaluations in their exchange rates.

For countries with external deficits due to unfavorable cost-price structures, the most advisable policy prescription—as alluded to earlier—is to keep money wage increases below productivity increases. Failing that, the rate of money wage increases should be kept in line with productivity increases. An appropriate way to accomplish such a price policy is to adopt measures which stimulate investment and increase productivity, particularly in export and import-competing industries. Increased restrictions on imports usually are not prescribed, since they tend to lead to higher domestic prices for imports and a lower rate of economic efficiency in import-competing industries. Finally, deficit countries can, if necessary, devalue their currencies, provided it is recognized that devaluation in and by itself is not likely to be a successful remedy if action is not taken to prevent a reemergence of adverse cost-price structures. An additional proviso regarding exchange rate adjustments, whether by deficit or surplus countries, is that under the present international monetary system it is considered preferable that non-reserve-currency rates be moved in relation to reserve-currency rates, rather than vice versa.

When excessive outflows or inflows of capital are the primary cause of payments imbalances, the general policy prescription is to make some

adjustments in interest rates to alter the capital flows. For example, countries in deficit due to large capital outflows are usually advised to adopt monetary policies leading to higher interest rates, so as to discourage capital outflows and encourage capital inflows. On the other hand, countries in surplus because of abnormally high capital receipts usually are advised to decrease interest rates. If monetary policies have to be so altered, however, and if it is also desired to maintain a given balance in internal demand, it will then be necessary to make offsetting changes in fiscal policies. But a change in the policy “mix” to alter international capital flows is conditioned, in the first instance, by interest rates in other countries, and by the obvious need to avoid an inappropriate level of interest rates internationally. Additionally, a change in the policy “mix” may not be the most advisable remedy to use on a continuing basis if (1) undesirable repercussions may result internally on the composition of aggregate demand and economic growth, and if (2) the imbalances in capital flows are due to factors other than interest rates, such as structural changes in the international demand for capital, and restrictions on the efficient operation of international capital markets. Hence, while at times interest rate adjustments may be an appropriate technique to alter imbalances in capital flows, they should not be considered as a panacea, nor as a substitute for needed actions of a more fundamental nature.

In the event that adjustments in interest rates to alter excessive capital flows appear neither feasible nor desirable, it is sometimes prescribed that countries employ selective measures to directly control the size and nature of capital movements. For example, selective controls often are advocated to prevent the development of large-scale capital flows which may be temporarily destabilizing in nature or reflective of noncompetitive market conditions abroad. Also, the use of selective measures,

whether to encourage or discourage capital flows, sometimes is considered desirable in the interest of making internal monetary policy more effective. There are, however, a number of reasons why the continued reliance on capital controls is not considered advisable. For instance, it often is pointed out that a minimization of capital controls is the best assurance that over the long run the world's supply of capital will be most efficiently and appropriately allocated among countries. Furthermore, it is commonly believed that the effectiveness of capital controls often tends to diminish with the passage of time. And finally, prolonged reliance on capital controls may well be symptomatic of the need to make more basic adjustments to correct payments imbalances between countries. Thus, as in the case of interest rate adjustments, reliance on capital controls may be appropriate at times but should not be considered as a permanent solution to external disequilibria.

CONCLUSIONS AND IMPLICATIONS

The policy prescriptions cited above for each of the three common causes of payments imbalances, while neither exhaustive nor mutually exclusive, are generally considered to be the most appropriate means to accomplish improvements in the present adjustment mechanism. In general, these policy prescriptions hold that, under the present system of relatively fixed foreign exchange rates and with internal prices and wages tending to be inflexible in the downward direction, the appropriate speed of adjustment depends on the nature and cause of the payments imbalance. In cases where payments imbalances are due to excessive or deficient levels of aggregate demand, it is recommended that adjustment be accomplished as soon as possible through prompt and effective use of monetary and fiscal policies designed to supplement the automatic equilibrating mechanism. In other cases, for

example when imbalances are due to international cost-price disparities, it is suggested that there may be no particular virtue in speedy adjustment along the lines of the automatic equilibrating process if a slower adjustment process will permit countries to achieve their internal policy objectives of full employment, economic growth, and price stability.

In those cases where a slower adjustment process is deemed desirable, however, it is necessary that all countries recognize and accept certain conditions and responsibilities without which such an adjustment process will not be effective. First of all, it is essential that during the time in which the slower adjustment process is working, an adequate supply of international liquidity should be made available to enable countries to satisfactorily accommodate extended payments imbalances. Secondly, it is imperative that to prevent possible abuses in the creation or extension of additional international liquidity, countries should promptly initiate and maintain economic policies designed to eventually correct payments imbalances. For all countries, this implies the adoption of monetary and fiscal policies aimed at maintaining a growth rate in internal demand that is consistent with their productive potential and also consistent with relative price stability internationally. In addition, surplus countries should be willing, if necessary, to reduce restrictions on their international trade and payments, while deficit countries should refrain from imposing additional restrictions on their trade and payments, except possibly on a strictly temporary basis. Finally, if under these conditions, payments imbalances appear likely to continue, it would then be entirely appropriate for non-reserve-currency countries to make either upward or downward alterations in their foreign exchange rates.

For the United States, which has been experiencing sizable deficits in its international payments position for the past several years,

the implications of the foregoing policy prescriptions are quite clear. To correct its payments deficit, it would be inappropriate for the United States, as a reserve-currency country, to alter unilaterally its foreign exchange rate because such action would be detrimental to the continued stability of the international monetary system. Moreover, it would be undesirable for the United States, as the largest capital exporter in the world today, to view the use of selective controls over its capital outflows, such as the Interest Equalization Tax, as a permanent solution to its balance of payments difficulties. Rather, the most appropriate solution, albeit a slow working one, is for the United States to make its goods and services more competitive with foreign produced goods and services, both at home and abroad. Clearly, the best way to accomplish

this in a nondiscriminatory manner is for the United States to prevent an upward movement in its average level of prices and wages—so as to improve its cost-price structure relative to other countries—and to achieve balanced economic growth domestically. The importance of price stability in the United States cannot be overemphasized because it is not only a key element in the achievement of long-run balance in the United States external position, but it is also a crucial ingredient in the attainment of a sustainable economic growth rate internally. Hence, the policy prescription for the United States, which is simultaneously consistent with internal and external balance, is the vigorous and flexible pursuance of monetary and fiscal policies designed to promote and maintain a noninflationary and stable rate of economic growth.

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