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Liquidity in Our Expanding Economy*

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It is a pleasure to meet again with this distinguished group and discuss some of the common problems affecting the commercial banker and central banker. In talking to you a year ago I devoted my remarks to the urgent problem of our balance-of-payments deficit and the consequent international challenge which our monetary policy has had to meet. While that problem and challenge remain urgent —notwithstanding some good progress in the past six months—I'd like to concentrate today on domestic monetary matters. In particular, I should like to call attention to some questions raised by the state of liquidity inside and outside the banking system as our economy continues the expansion that began some three years ago. For on this "home ground" for the commercial and central banker I believe we are evolving important new experience of mutual interest. I hasten to add, however, that in focusing on domestic credit developments we cannot, these days, afford to ignore balance-of-payments implications; for these are clearly an inseparable part of the total economic picture, and they have played, and will certainly continue to play, a significant role in shaping the course of monetary policy.

As a starting point, it might be appropriate to sketch quickly the economic position and monetary policy posture of the past few years. Essentially, the Federal Reserve System has faced the task over this period of fostering sustainable domestic economic growth while strengthening and protecting the international position of the dollar. Toward the end of 1961, with economic recovery from a mild recession well under way, the System began to move gradually toward reducing the degree of monetary ease adopted during the recession. These moves continued as the domestic economy advanced further while the balance-of-payments deficit displayed disappointing stubbornness. By the middle of 1963 the further gains in our domestic economy made more feasible, and the deterioration in our balance of payments made imperative, a more overt move toward less ease—designed particularly to check the outflow of funds attracted by higher interest rates available abroad.

The increase in the discount rate last July, and the accompanying firming of the money market atmosphere, was immediately reflected in higher short-term interest rates, which in turn contributed importantly to the improvement in our balance of payments during the second half of last year. At the same time, the growth of bank credit has continued practically unabated, as monetary policy from the domestic standpoint has retained a distinctly accommodating posture—albeit a less openly stimulative one than earlier. As a result, the economy is about as liquid, and by some standards even more liquid, now than in the recessionary period of a few years ago when the Federal Reserve was aggressively pushing reserves into the financial stream. In dollar terms the economy's liquidity has scaled unprecedented heights.

During earlier postwar expansion periods, in contrast, the liquidity of the economy typically sustained a marked decline. Growth in money supply slowed down and increases in total liquid assets proceeded more moderately than the increases in total spending, while higher interest rates throughout the maturity range and for various types of debt registered the increased pressure of demand on loanable funds. Of course, in partial explanation of the contrasting experience in the current expansion, we have had along with the recent rise in economic activity a persistent margin of unemployed resources, and a welcome absence of general inflationary pressures. With unemployment rates hovering between 5 and 6 per cent of the labor

* An address before the thirty-sixth annual midwinter meeting of the New York State Bankers Association, New York City, January 20, 1964.

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force and broad price averages holding relatively steady, there has been no call for restrictive monetary policies of the kind that were appropriate in some earlier postwar years of business expansion.

Nevertheless, I think we must ask ourselves whether the growth in volume, and changes in form, of liquidity instruments characteristic of the past year or two will remain appropriate for our economy as it moves ahead. Apart from any balance-of-payments impact of our high liquidity, there is the cumulative effect on the domestic financial climate to be considered. This is of broad concern not only to the central banker, because of his necessary preoccupation with the totality of financial developments, but also of particular concern to the commercial banker because of the special role of bank demand deposit money in the economic adjustment process and the very striking role of bank time deposits in recent liquidity growth.

Before proceeding further to examine the recent record, it might be well to agree on what we mean by the term "liquidity" in the nonbank sectors of the economy. For any single individual or business, liquidity may be defined simply as holdings of cash and ready access to cash through sale of assets. In turn, ready access to cash may be thought of as assets that are marketable at little risk of loss of principal. Thus we have in mind here a number of types of assets, ranging from "money" in the usual narrow sense of currency plus bank demand deposits through a wide variety of "near-money" instruments, such as savings deposits and short-term Government securities. The liquidity of any of these short-term assets depends on the ability of financial markets to convert them into money in the narrow sense at little or no sacrifice. Needless to say, there are different degrees of liquidity or "nearness to money" depending on how readily and at what price this conversion can be accomplished.

Commercial banks and many other financial institutions share the ability to provide liquid assets in exchange for longer term or other less liquid claims on the private and public sectors of the economy. A good deal of the liquidity required by the economy is generated as banks and other financial intermediaries attract personal and corporate money savings or temporarily idle funds and give, in return, interest-earning deposits, shares, insurance policies, or comparable instruments. These intermediary financial institutions, in turn, assure their ability to meet liquid liabilities by keeping cash or near-money reserves the size and nature of which are determined by experience, custom, and official regulation. Among the intermediaries, however, commercial banks have the unique ability to create the most liquid kind of financial asset—demand deposit money—which, together with currency, is the only universal means of payment.

This little discourse on our monetary system is rather elementary fare for this group, but I assure you that I find it most useful to remind myself of these fundamentals before treading on the more slippery ground that I'd like to cover today. For when it comes to considering the role of particular types of institutions in this broad framework, and especially the changing position occupied by commercial banks in recent years—and the potential implications of such changes for monetary policy—it is quite desirable indeed to have these elementary points in mind.

Let me approach these considerations by noting, as you well know, that commercial banks have become increasingly aware in recent years of the desirability of acquiring savings and other time deposits to be channeled into higher yielding assets. For personal savings accounts, this tendency goes back through most of the postwar period, although there has been a notable acceleration in the last few years. As regards corporate and other time deposits, the period of rapid growth is more recent but the total increments have been even more spectacular. The ability of commercial banks to enlarge their role as financial intermediaries has been strikingly enhanced by the recent series of changes in Federal Reserve Regulation Q, particularly since the end of 1961, and by the emergence of negotiable time certificates of deposit as a major money market instrument. Raising the ceiling rates that commercial banks may pay on time deposits placed the banks in a position to compete for corporate and other funds seeking temporary investment. A large volume of funds that previously might have been invested mainly in Treasury bills or private money market instruments was thus retained in, or brought back to, the banking system.

I promise not to weigh you down with statistics, but I think a few numbers are needed here to nail down some of the general magnitudes involved. Thus the growth in commercial bank time deposits last year was over $14 billion, and this followed on the heels of a similarly large increase in 1962. Perhaps about a third of that two-year rise has taken the form of negotiable time certificates of deposit, issued mainly to corporations. By itself, of course, the liberalization of Regulation Q was merely permissive, with the active force provided by aggressive bank bidding for funds. However, the sharp burst of expansion in time deposits has not taken place, in any readily obvious manner, at the expense of growth in other near-money forms. Substantial growth has continued in mutual savings bank deposits and savings and loan shares, and there has been a continuing growth in holdings of Treasury bills, other short-term Government securities, and various types of

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commercial paper outside the banking system. For the most part, then, the enormous growth of commercial bank time deposits has come from new savings and transfers from demand balances of funds that either had been relatively idle or that were newly created through the familiar processes of bank credit and deposit expansion. Thus in the same two years that commercial bank time deposits rose by some $29 billion, or 35 per cent, the demand deposit component of money supply rose only about $5 billion, or roughly 4 per cent. Even currency in circulation —which one does not usually think of as a highly significant component of a financial mechanism as sophisticated as our own—expanded more quickly than bank demand deposits, rising about $3 billion or 10 per cent over the past two years.

The accelerated growth of near-money assets and relatively slower growth of money supply are not products merely of the past few years. These trends have been in process ever since the end of World War II, and particularly since the 1951 Treasury-Federal Reserve accord, when flexible monetary policy was re-established in this country. Once some of the excessive wartime liquidity was siphoned off in the immediate postwar years, an atmosphere re-emerged in which holders of financial assets continuously appraised the relative attractiveness of various near-money assets; yields were weighed in relation to liquidity and to the risk of capital losses (or possible gains) in the event of conversion into money. Higher short-term interest rates provided the incentive to move funds into these various near-money forms, but the ability and willingness of individual, corporate, and other holders of cash to reduce their cash balances to the minimum also reflected the success of financial intermediaries and final borrowers in providing attractive financial instruments. In addition, it has reflected the successful efforts of those who help provide a smooth and flexibly functioning money market. Incidentally, very much the same trend toward more economical use of cash balances—or, if you will, higher velocity of circulation of money—has taken place in a number of other countries, too.

While our money supply has declined markedly in relation to total spending in the economy (or gross national product), the total amount of liquid assets held by the public has grown alongside GNP, at a roughly comparable rate. And in fact, in the past few years nonbank liquid asset holdings have risen somewhat faster than total spending, so that the ratio of liquid assets to the annual rate of GNP increased from about 78 per cent in late 1961 to over 81 per cent last year. But before commenting on that increase, let me point out that, while the declining trend in money supply relative to GNP has persisted through the postwar period, it is only in the past few years that accelerated growth in time deposits of commercial banks has enabled the commercial banking system as a whole to maintain a roughly proportionate share of the economy's credit expansion. This has been desirable, I think, because banks are able, in terms of both technical facilities and experienced judgment, to place funds in a variety of alternative ways; this flexibility, with the banks picking and choosing among alternatives on the basis of yield and liquidity considerations, helps to produce an economically efficient result that has much to commend it.

As you know, some observers of the financial scene have expressed considerable misgivings over the slower growth in money supply proper, and the faster growth in near-money assets, compared with GNP, apparently feeling that the relative shrinkage of money supply also implies a diminution of influence for monetary policy. Such concern seems misplaced to me, however, for the very slowdown in growth of money supply, as excess liquidity was squeezed out or absorbed into minimum required working balances, has represented one of the successful results of monetary policy. So long as the monetary authorities retain an effective control over growth in the bank reserve base and the general climate of bank reserve availability, I believe that we have considerable influence over new credit formation. The fact that some of the newly created deposits shift out of the demand form into near-money assets endowed with varying degrees of liquidity is a significant development that we watch closely, but not a cause for concern since I think that these are factors we can take into account in providing marginal reserves to the banks with more or less alacrity or reluctance. The Federal Reserve's strategic influence on the over-all cost and availability of credit also tends to be preserved because financial intermediaries must maintain adequate cash working balances, usually in the form of demand deposits, and because the intermediaries rely on their ability to shift quickly between liquid assets and money, to meet fluctuating cash needs with minimum cash balances.

There might be greater cause for concern on this point if we had reason to expect large and sudden shifts, or desires to shift, from near-money assets to money, or if we had reason to anticipate sudden changes in the attractiveness of different types of liquid assets as money substitutes. On this score the experience of recent years provides some basis for confidence. While there have been some large shifts from one type of asset to another —such as from demand to time deposits—these shifts have not been so sudden as to throw our stabilization mechanism off balance.

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Are these judgments altered because so much of the recent growth in near-money assets has been in the form of commercial bank time deposits? It could be argued that central bank influence is weakened because time deposit claims can be converted more readily into demand deposits than can some other types of liquid assets. Again, however, recent experience suggests no great volatility here—except perhaps for the artificial volatility that may emerge if the rates payable under Regulation Q become noncompetitive with market rates. On the other side it might even be argued that the increased proportion of near-money asset growth within the banking system has enhanced the position of monetary policy, in that such growth *within* the banking system may be a little more susceptible to central bank reserve influence. Of course, favorable recent experience is no proof that we will not experience future problems on this score.

I mentioned earlier that the recent period of expansion has been noteworthy not only for the enlarged financing role of commercial banks, but also because the over-all growth in credit and liquidity has been larger than usual for a period of business expansion. While the degree of monetary and credit ease has been reduced in the past two years, this reduction seems to have found little reflection in any lessened availability of bank funds for employment in new loans and higher yielding investments. It has been reflected, however, in the trend of bank holdings of Treasury securities, which is an area that often feels the first impact of monetary policy; in 1962, commercial banks refrained from adding to their holdings of Treasury securities, and in 1963 they reduced their holdings by some $3 billion to $4 billion. This disinvestment, of course, played a part in firming the level of short-term interest rates last year. It has probably had some effect on longer rates as well, although in such major areas as bank loans to business and home mortgage loans there has been no significant rate increase. In fact, for mortgage loans, a market in which increased bank participation has been of particular importance in the past two or three years, rates were still moving lower until the latter part of last year. The continuing ready availability of United States bank loans to foreigners is another indication of relative credit ease and substantial liquidity.

Without taking time here to review each segment of the credit markets in detail, I think it can be asserted with some confidence that after three years of business expansion and over two years of gradually lessened applications of ease from the central bank, we still have an ample availability of credit in this country. This shows up not only in the rate and volume trends I have alluded to, but also in the occasional outcroppings of poor credits. I do not by any means want to convey an impression that there has been a wholesale deterioration of credit standards, but I do think that the few well-publicized instances of unsound financing serve as timely reminders—first, that the over-all availability of credit is plentiful and, second, that while there is no way of determining precisely how much credit is just the right amount at any particular time, there is also no satisfactory substitute that I know of for sound, informed judgments in making individual loans and investments.

The large expansion of credit through banks and other financial institutions, and the sharp rise in nonbank liquidity that I mentioned earlier, are simply two sides of the same coin. And with liquidity, too, as with the volume of credit, there is to my knowledge no simple test that can determine whether this is now too high, too low, or just about right in relation to the economy. I do feel rather strongly, however, that the recent pace of increase bears careful watching as our resources become more fully utilized. The mere fact, also noted earlier, that the proportion of nonbank liquid assets to GNP has risen in the past two years, even though there has usually been a decline in periods of business expansion, is enough to give one pause.

I have been speaking thus far mainly about liquidity outside the banking system, which is the direct counterpart of credit extended by banks and through other financial intermediaries. As commercial and central bankers we are, of course, also concerned with liquidity within the banking system, which is a kind of fulcrum on which the central bank seeks to operate in order to affect the willingness of commercial banks to extend new credits. There are, of course, different ways of viewing bank liquidity, none of them right or wrong in themselves, but each adding a different perspective to this complex subject. Thus while the total reserves of member banks usually would not be included in measures of bank liquidity—if only because the bulk of such reserves is used simply to meet official requirements—I think this may make a useful starting point in considering the expansion potential in the banking system. By this standard—the size of total member bank reserves held with the Federal Reserve Banks or in the form of vault cash—there has been substantial growth in "bank credit potential" in the past two years, after including an appropriate allowance for the lower reserve requirement ratio against time deposits adopted some fourteen months ago. A good part of this growth, however, was needed merely to back the swiftly rising volume of time deposits.

At the same time, some portion of the increased reserves held by member banks was obtained through the

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"discount windows" of the various Federal Reserve Banks, and hence could not be regarded as having the same potential for credit expansion as the rest of the banks' reserves. Thus on the basis of so-called "nonborrowed reserves"—or reserves other than those obtained through the discount window—bank credit expansion potential grew more slowly. An even greater contrast is provided by considering the net "free reserve" position of the banking system, or excess reserves less borrowings from the Reserve Banks, which is usually considered part of the standard bank liquidity measures. This quantity, which has declined appreciably in the past two years, is a rough indicator that might be associated with the current unused margin of reserve availability; while it does not measure total bank liquidity, it is sometimes a sensitive indicator of the net pressures on banks to speed up or slow down the aggregate formation of credit and liquidity. We should be aware, however, that the significance of any given level of free reserves can vary greatly, depending on the pressure of demand for bank credit.

Bank liquidity, of course, comprises many elements in addition to the margin of free reserves held with the central bank. By and large these broader measures—such as ratios of loans to deposits and ratios of short-term liquid assets to deposits—suggest a decline in liquidity during the past few years, although of somewhat smaller proportions than in other business expansion periods. There should be nothing at all surprising in these declines. The banking system generally emerges from a period of recession and actively easy money with a relatively low proportion of loans and high proportion of liquid assets compared with deposits. As the expansion flowers, more attractive opportunities arise for putting funds to work profitably and safely, but in less liquid forms.

The thought occurs to me, however, that, given the major shift in the composition of bank deposits in recent years, the decline in these conventional measures of bank liquidity may not have quite the same significance as before. With a substantially larger portion of its deposit claims in the form of time rather than demand deposits, it would seem only natural for a bank to feel somewhat less constrained by particular loan-to-deposit or liquid asset-to-deposit ratios than it did before. Thus, while our usual measures of bank liquidity do show some decline in the past few years of business expansion and lessening credit ease, I feel that liquidity is still quite ample within as well as outside the banking system. Nevertheless, the decline in conventional measures of bank liquidity does mean that the banking system is, so to speak, on potentially closer rein than before. If it should happen that a sharply accelerated business expansion generated greater needs for cash balances and induced substantial switching from time to demand deposits, the decline of bank liquidity would have a sharper impact on bank lending and investment policies.

As we face the new year, the underlying economic situation seems to be about the same as in the past two years. There has been solid economic expansion, although not enough to eliminate a margin of excessive unemployment. And there has been a persisting balance-of-payments deficit which was materially reduced in the second half of last year but the elimination of which must continue to command our strongest exertions. In fact, the longer the deficit lasts, the more urgent its elimination becomes, if the dollar is to retain its status as the principal reserve currency. While the business expansion is now about three years old, it does not yet seem to have run out of steam, and prospects for an early tax cut should help to keep it moving along—perhaps even accelerate it. Fortunately, the Administration's current economy drive and streamlined budget should mean that there will be no great demand for additional Federal financing on top of the private demands that would be generated by further business expansion.

In coming months, we in the Federal Reserve System will be weighing the extent to which banks may appropriately supply a part of over-all credit and liquidity requirements. As in the past, we shall be guided by the continuing need to see the country's resources as fully employed as possible, but also by the need to avoid a build-up of demand pressures or of unnecessarily ample liquidity that would spill out in the form of upward price movements at home and further dollar outflows abroad. In short, we shall be trying to do the job for which the Congress created the Federal Reserve System fifty years ago. And in doing so, I know that we can count on the wholehearted and informed support of bankers throughout the country.

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The Business Situation and Recent Price Trends

Buoyed by the economy's appreciable gains in December and in the fourth quarter as a whole, business sentiment in the early weeks of 1964 was almost uniformly optimistic. Most observers felt that these gains and the absence of speculative inventory accumulation in the current upswing, together with the stimulus of a prospective tax cut, would provide a firm basis for a fourth consecutive year of expansion. The achievement of so sustained an advance would be truly impressive, having no post-World War II parallel.

The stronger note on which 1963 closed carried gross national product to $600 billion in the fourth quarter, with the rise from the previous quarter being the largest in two years. The gains recorded in December contributed importantly to this outcome, as retail sales surged to all-time highs and industrial production and employment advanced further. Moreover, economic activity seemed to be continuing at a high level in January.

Favorable appraisals of business prospects were thus based on both the recent strength of the economy and the increasing certainty that a tax cut would shortly be enacted. Indeed, the Council of Economic Advisers suggests that 1964 GNP could amount to about $621 billion (plus or minus $5 billion), about 6 per cent higher than in 1963, on the assumption that a tax cut is effective March 1. Such a sizable rise, in the Council's view, might reduce the unemployment rate to about 5 per cent by the end of the year. Despite the possibility that a substantial amount of human resources may continue to be unused, the recent rise in industrial prices, though modest in size, makes it apparent that a close watch of price developments will be necessary in 1964.

INDICATORS OF RECENT ACTIVITY

Industrial production, as measured by the Federal Reserve's seasonally adjusted index, advanced by 0.5 percentage points in December, with small gains spread through most industries. This brought the December-to-December advance in production during 1963 to 7 per cent, compared with a rise of only 3 per cent during 1962. In both years, most of the gain occurred during the January-July period, partly reflecting in each case the temporary surge in steel output in anticipation of a possible strike. There is no threat of a steel strike in 1964 but, with steel consumption high and still rising, ingot production continued to move up in January. On the other hand, assemblies of new automobiles in the opening month of the year fell off from the very high rate in December, as the industry attempted to bring production more closely into line with expected sales.

In contrast to the rise in production during December, new orders received by manufacturers of durable goods declined for the second consecutive month. The total fall since October amounted to 5 per cent. Most of this slippage was concentrated in the transportation equipment sector, and reflected a sharp decline for the second month in a row in the somewhat erratic series on aircraft orders and a decrease in orders for motor vehicles and parts. (The statistics for the motor vehicles series largely represent manufacturers' shipments of new cars to dealers rather than orders for future production.) Total new orders for durables excluding those for transportation equipment remained about unchanged in December.

Total employment rose substantially in December and the number of persons on nonagricultural payrolls increased by 182,000, reflecting gains in the government, service, and construction sectors as well as in manufacturing. Over the past year as a whole, total employment grew by 1.1 million persons but, with the labor force rising by about the same amount, there was no net reduction in unemployment. Thus, the over-all unemployment rate—although down from 5.9 per cent in November to 5.5 per cent in December—was unchanged from a year earlier. There was a small net decline over the year in unemployment of adult men, but this was offset by an over-the-year rise in joblessness among teen-agers.

Perhaps the brightest note in December was the strong support coming from the consumer sector. Following a relatively sluggish performance from August through November, retail sales jumped substantially in December.

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A part of this rise, to be sure, reflected a recouping of sales lost in November, owing to the assassination of President Kennedy and also the later than usual date of Thanksgiving. But the very fact that Christmas shoppers indicated a desire to catch up seems to have removed many of the doubts about the underlying strength of consumer buying intentions. Weekly figures in January suggest that total retail sales remained at about the high December level, on a seasonally adjusted basis, despite a slackening in the pace of automobile sales from the very high December rate. Even with this decline, dealers were still selling the new models at weekly rates high enough to suggest that seasonally adjusted annual rates of sales exceeded 7 million units.

Residential construction in the closing months of 1963 was at record levels, with December only fractionally below the high November rate. Indicators of future activity point to continued strength in the months ahead, as housing starts edged upward in December while new permits jumped to record levels.

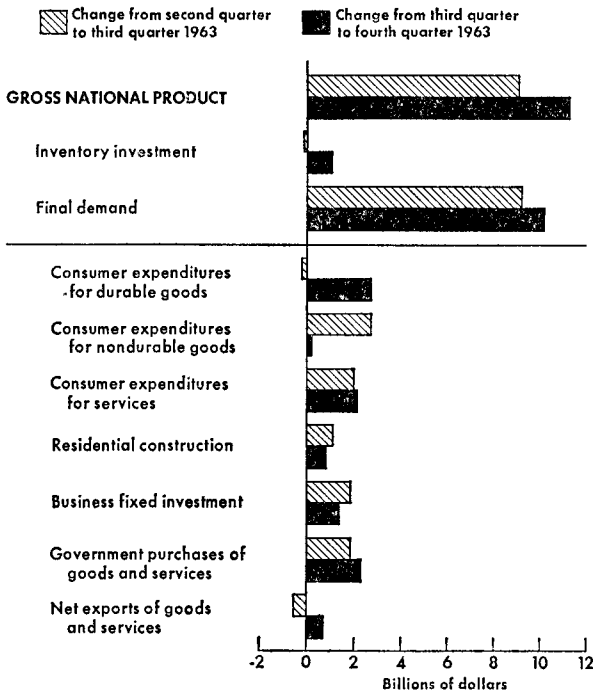
Partly as a result of the year-end surge in consumer buying, GNP in the fourth quarter rose by $11.3 billion (seasonally adjusted annual rate, Council of Economic Advisers estimate)—a somewhat larger advance than in the previous quarter (see Chart I). Although there was some step-up in the rate of inventory accumulation, most of the fourth-quarter gain came in final purchases, with outlays for consumer durables providing the largest push. Government purchases of goods and services also rose appreciably, as the military pay rise boosted Federal spending and as state and local government expenditures continued upward. Outlays for residential construction and business fixed investment also rose, although less than in the third quarter; and increased United States exports, together with a slight decline in imports, contributed to an advance in the "net exports" component of GNP.

With the gain in the fourth quarter, GNP for the year as a whole reached $585 billion, 5.4 per cent above the 1962 level. From the fourth quarter of 1962 to the fourth quarter of 1963, the rise was even larger, amounting to 6.2 per cent. Price rises accounted for some of the advance on either basis, but more than two thirds of the increase reflected a gain in real output.

Chart I

DOLLAR CHANGES IN GNP AND ITS COMPONENTS

Seasonally adjusted annual rates



Sources: United States Department of Commerce; Council of Economic Advisers.

RECENT PRICE TRENDS

The absence of strong upward price movements through a three-year expansion is certainly encouraging, particularly when contrasted with the experience of the early and mid-1950's. Nevertheless, prices have continued to rise modestly in an irregular pattern, and continuation of a reasonable degree of stability cannot be taken for granted. Moreover, further gains in business activity, which would tend to reduce excess manufacturing capacity, could leave the economy more vulnerable to inflation. Awareness of the danger has led President Johnson to reaffirm his predecessor's wage-price "guideposts" and to institute an "early warning system" for detecting prospective price and wage increases.

Last year's price movements included another rise in the Consumer Price Index, as now computed, with the December figure 1.7 per cent above its year-earlier level.[1] The increase was somewhat greater than in 1961 and 1962, though about equal to the advances registered in

[1] The Consumer Price Index, like other important economic statistics, is updated and refined from time to time. A revised series is due shortly; among its major changes will be weights based on urban spending patterns in 1960-61 rather than 1950, and reflecting budgets of single persons as well as of families.

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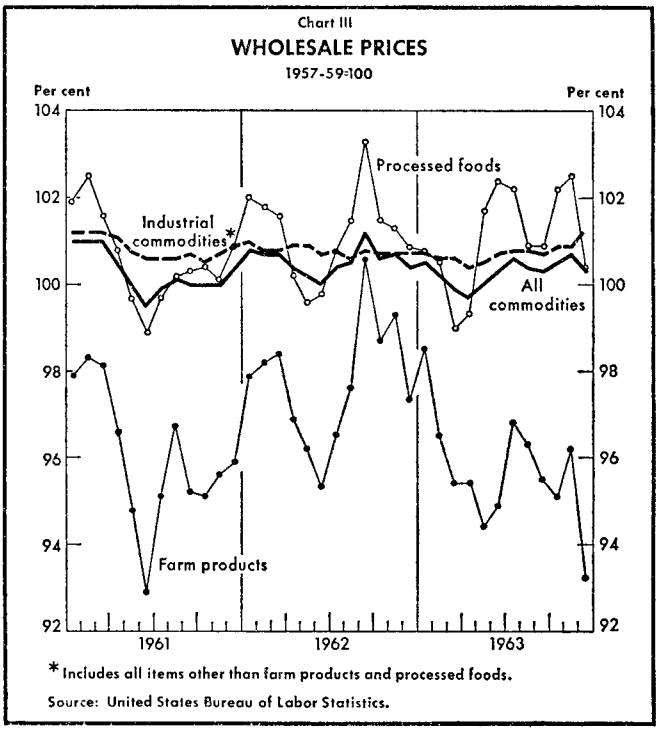
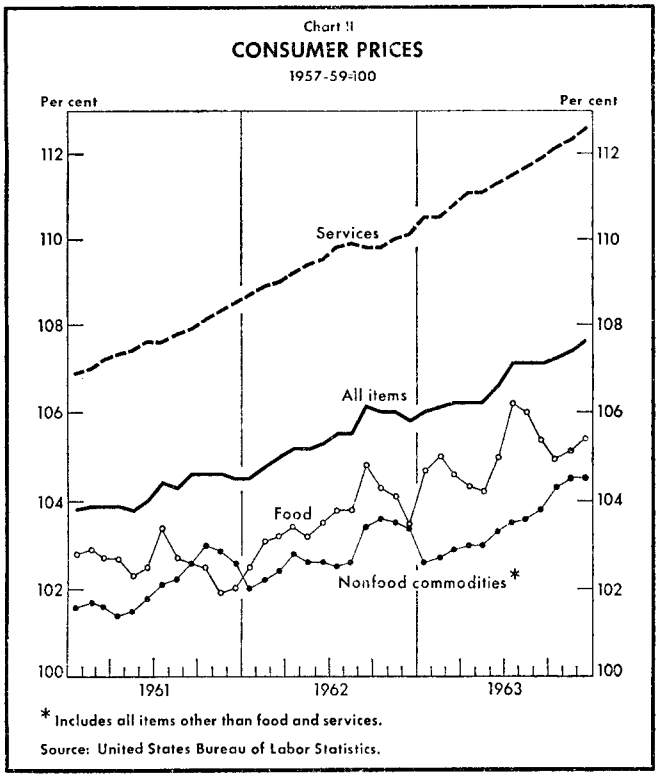
each of the three preceding years. Prices of services, food, and nonfood commodities all rose a bit more last year than in 1962, with the largest advance—as usual—coming in the service category (see Chart II). At the wholesale level, the over-all price index showed virtually no net change on a December-to-December basis, as a drop in farm product prices offset a modest 0.5 per cent increase in the average price of industrial goods (see Chart III). Within the year, however, wholesale prices declined slightly through mid-April, and then turned moderately upward—reflecting price boosts in the spring and fall.



INDUSTRIAL COMMODITIES. The wholesale index for commodities other than farm products and processed food has fluctuated within a remarkably narrow range since the late 1950's. In December 1963 this measure was a shade below its level of four years earlier, but slightly higher than at the end of 1962, because of a moderate updrift after early spring.

This strengthening of wholesale industrial prices over the last two thirds of 1963 was clearly associated, at least in part, with the continuing business expansion. As slack capacity was gradually being taken up and demand strengthened, producers of certain important items were able to make price increases "stick", while others could reduce or drop discounts from list prices. Thus, prices were boosted in either the spring or early fall for such heavily used steel mill products as sheet, strip, bars, and plates, with the over-all steel industry index advancing by about 2 per cent. At the same time, higher steel production apparently helped reverse the previous downdrift in steel scrap prices, which had partly reflected reduced use of scrap per ton of steel manufactured. In the aluminum industry, ingot prices—after tending downward for several years as a result of severe competition and slackened demand—recovered some ground last October. Prices of other nonferrous metals also strengthened noticeably in 1963, with lead and zinc hikes reflecting growing demand and a removal of the drag exerted by previous high levels of inventories.



Prices of metals and other industrial commodities are of course very closely related to world market conditions. The continuing growth of industrial production in Western Europe and other major manufacturing centers over the last few years, combined with the sustained United States expansion, appears at long last to have brought demand for primary goods into closer balance with supplies, after years of actual or potential surplus. Tin production, for example, has failed to expand sufficiently during the last

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half decade to match a rapidly rising world-wide industrial demand. In spite of new techniques that economize on tin, the previously accumulated stockpiles of the metal, including those of the International Tin Council, have been drawn down gradually so that tin prices have now come under increasing upward pressure. In 1963, the tin price reached a high not matched since early in the Korean conflict.

Last year's moderate rise in industrial prices was not limited to metals. Increases were registered also for certain types of machinery and construction materials as well as for other goods. Moreover, several announced rises for industrial products have just taken effect or are scheduled to take effect shortly, and hence have not yet been reflected in the available statistics. On the other hand, some price hikes could not be maintained—among them two recent attempts to boost further the price of aluminum ingot—and declines such as those registered by fuels, leather, and chemicals were by no means uncommon in 1963. The maintenance of prices for new car models at essentially the levels prevailing in the previous year and the apparently widespread practice among fabricators of absorbing increases in their material costs also contributed to the relative over-all stability of industrial prices. At the retail level, increases occurred for apparel, newspapers, and cigarettes—although higher sales and excise taxes were a factor in some instances, along with higher manufacturing costs.

There is always a question whether cyclical changes are faithfully reflected in the wholesale index. Company reporting on price discount practices may at times be less than complete, particularly when salesmen and buyers are given some discretion in negotiating these arrangements. The Bureau of Labor Statistics uses a variety of survey techniques to ascertain at what prices transactions are actually consummated, but it is doubtful that even the most refined methods provide a full solution. Thus, the index may not reflect the direction of unrecorded short-run adjustments in actual transaction prices, which would of course be upward when demand increases relative to supply and downward when the opposite condition holds. With a gradual fading-away of the "buyer's market" in a number of lines, unreported changes may in recent months have led to an understatement of actual price rises.

FARM PRODUCTS AND FOOD. The wholesale farm products index—which moved downward after early 1958 but turned moderately upward in 1962—resumed its decline in the past year. The downdrift in 1963 was mainly due to a substantial easing of livestock prices. Indeed, movements in meat-animal prices have been a prime influence on the course of the wholesale farm products (and processed foods) index over much of the postwar period. These changes have in turn been associated with livestock production cycles, which are fairly independent of general business conditions. In early 1958, when the low points in the cycles of cattle and hog production coincided and fewer animals were marketed, farm product prices reached a peak. Since then, livestock prices have generally trended downward, with most of the decline occurring in 1958-59. This movement was interrupted, however, in the third quarter of 1962, when many farmers temporarily withheld animals from slaughter. Partly in reaction to this development, marketings subsequently rose and prices again declined.

In contrast to the farm products index, wholesale prices of processed foods—although easing a bit in early 1963—were close to their year-earlier level in December. At retail, prices of food consumed at home, which tended moderately higher in 1961 and 1962, showed a further net rise last year. Declines for meats and several other items were more than offset by higher prices for fruits and vegetables, baked goods, and sugar. Restaurant meals—which contain a large service element—continued their long-term uptrend.

Price gyrations of one single commodity—sugar—have recently had a significant influence on the wholesale and retail food indexes. The price of raw sugar advanced very strongly in April and May, mainly reflecting tightened world supplies associated with poor beet crops in Western Europe and reduced availabilities from Cuba. The price increase in the raw material spread to the refined product and to such sugar-using items as canned and frozen fruits, beverages, and confectioneries. Sugar prices subsequently experienced wide fluctuations, with a downward influence from an unusually high domestic beet crop and further upward pressure from hurricane damage to Caribbean cane. As of mid-December, they were substantially higher than a year before but somewhat below their May peak.

CONSUMER SERVICES. The index of consumer service prices has continued the seemingly inexorable climb that has characterized its postwar history. Although the annual rate of advance dropped to less than 2 per cent in 1961 and 1962 from the 3 per cent average registered in the 1952-60 period, the pace last year was again somewhat steeper, with the over-the-year increase to December reaching 2.3 per cent.

Nevertheless, there is little in the past year's experience to suggest the likelihood of a renewed and prolonged acceleration of service price rises. A good part of the step-up was in transportation services, which resumed their 1960-

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61 rate of increase after an unusually small advance in 1962. The main influence here was the cost of auto insurance, which declined in 1962 when many persons first became eligible for lower "merit" rates but rose again last year, perhaps partly as a result of some large accident awards made by the courts. Although greater price rises were recorded in 1963 for several other services, such as dry cleaning, increases in costs of medical care and rent again slackened, as they had for several years.

THE FUTURE. Prospects for further general price stability depend largely, of course, on such underlying elements as world market trends in primary products and movements in the rate of capacity utilization, productivity, and wages and salaries. The outlook for raw material prices is mixed. Prices of metals and selected foodstuffs may rise further; coffee prices have already moved upward following the frost and drought damage to the Brazilian crop. Nevertheless, a wide range of key materials—including many foodstuffs and fibers—have been and are likely to remain in ample supply. As regards the utilization of productive resources in this country, factory output is still significantly below capacity levels, but the available measures indicate that some decrease in the gap occurred during 1963. Recent surveys, moreover, suggest that operating rates were fairly close to preferred rates in several individual manufacturing sectors, notably the textile, paper, and aluminum industries. A further expansion with concomitantly higher operating rates could strengthen tendencies toward higher prices.

It is, of course, desirable—indeed necessary—that further movements toward fuller use of the economy's resources will be achieved while keeping price rises in check. Some developments of recent years give cause for encouragement in this regard. Thus, strong import competition has placed restraints on upward price adjustments of domestic producers, and will most likely continue to do so. In addition, manufacturing output per man-hour has risen at an accelerated pace since the beginning of 1961, thereby helping to offset wage increases, which in turn have been relatively more moderate than in most of the earlier postwar years. The acid test will, of course, be the actual wage and price changes that may follow this year's important labor negotiations in such industries as automobile manufacturing, meat packing, and East Coast stevedoring.

Price stability is required not only to protect the domestic purchasing power of the dollar but also to strengthen the international competitiveness of the United States and thus improve the balance of payments. The progress achieved thus far toward price stability in a period of business expansion has been encouraging; the country should aim to do as well or better in 1964 and beyond.

The Money Market in January

The money market remained firm during most of January while smoothly accommodating the substantial flows associated with the unwinding of year-end financial adjustments and the Treasury's January advance refunding. At times, particularly in the first half of the month, sizable reserve pressures converged upon the New York City banks, as those banks met a large part of the expanded financing needs of Government securities dealers. Accordingly, banks in the central money market made large purchases of Federal funds, which were generally in good supply from banks outside the money centers, although a margin of needs remained to be satisfied at the "discount window". Later in the month, a somewhat easier tone developed at times, as the needs of money market banks declined while a good availability continued at other banks. Thus, Federal funds traded almost exclusively at

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3½ per cent through the middle of the month but occasionally dipped lower in the latter part of the month when member bank borrowing also declined. Unexpected additions to reserves from float and other market factors contributed to the occasionally easier market tone.

Treasury bill rates edged higher in early January as offerings—particularly from commercial banks—expanded. In the latter part of the month, rates receded slightly, largely reflecting both reinvestment demand from holders of "rights" issues in the Treasury's advance refunding and seasonal nonbank demand. Rates posted by the major New York City banks on new and renewal call loans to Government securities dealers were most often quoted in a 3⅞ to 4 per cent range through January 20, and largely in a 3½ to 3⅞ per cent range thereafter. Toward the middle of the month, dealers in bankers' acceptances, after experiencing a sharp rise in inventories to a record level, increased their rates on all maturities by ⅛ per cent, making the rate on 90-day unendorsed paper 3⅞ per cent (bid); subsequently, demand for acceptances improved considerably and inventories were reduced substantially in the latter part of the month. Offering rates for new time certificates of deposit issued by the leading New York City banks moved moderately higher during the early part of the month, as did the range of rates at which such certificates were offered in the secondary market, and then declined in the latter part of January. Rates on directly placed finance company paper were reduced by ⅛ per cent on paper maturing in less than 179 days, with an offering rate of 3¾ per cent being quoted on 90- to 179-day paper at the month end. Late in the month, commercial paper dealers lowered their rates by ⅛ of a per cent, making the rate on prime 4- to 6-month paper 3⅞ per cent (offered).

On January 8, the Treasury announced the terms of an advance refunding operation in which holders of $24.7 billion of six outstanding notes and bonds maturing in 1964 and 1965—including $15.3 billion held by the public—were given the opportunity to exchange these securities for reopened 4 per cent bonds of August 1970 or for additional amounts of the outstanding 4¼ per cent bonds of May 1975-85. Subscription books were open from January 13 through January 17, with total potential allotments limited to $4 billion additional 4's of 1970 and $750 million 4¼'s of 1975-85. On January 21, the Treasury disclosed that subscriptions had totaled $3.1 billion—including $2.2 billion for the 4 per cent bonds ($189 million from official accounts) and $900 million for the 4¼ per cent bonds ($150 million from official accounts). Subscriptions for the 4 per cent bonds consequently were allotted in their entirety; subscriptions for the 4¼ per cent bonds were allotted in full up to $50,000, while subscriptions in excess of $50,000 were subject to an 83½ per cent allotment, with $50,000 the minimum allotment.

Prices of outstanding Treasury notes and bonds drifted slightly lower in early January. With reaction both to the refunding and its results favorable, a firm tone generally prevailed in the market for Government notes and bonds in the latter part of the month. During that period, the market was also influenced by various official messages stressing, along with the desirability of a tax cut, the need to hold down Federal spending and restrain inflation. For the month as a whole, prices of coupon securities were generally higher, although the issues reopened in the advance refunding—and a few others—declined. Prices of corporate and tax-exempt bonds moved somewhat higher.

After the close of business on January 30, the Treasury announced the terms of its February refunding operation. Holders of $8.4 billion of the 3¼ per cent certificates and the 3 per cent bonds maturing on February 15—$4.3 billion of which is publicly held—were given the opportunity to exchange their holdings either for a new 3⅞ per cent note maturing on August 13, 1965 (priced at 99.875 to yield approximately 3.96 per cent) or for additional amounts of the outstanding 4 per cent notes of August 15, 1966 (priced at par). Subscription books were open from February 3 through February 5, and the exchange of securities was scheduled for February 17 (cash subscriptions were not acceptable).

BANK RESERVES

Market factors provided reserves on balance from the last statement period in December through the final statement week in January. Reserve gains—largely reflecting sharp seasonal contractions in currency in circulation and in required reserves—were only partially absorbed by declines in float and in vault cash. During part of the month, float declined more slowly than expected as snowstorms delayed the processing of checks.

System open market operations absorbed reserves during the month and more than offset the release of reserves by market factors. System outright holdings of Government securities decreased on average by $813 million from the last statement period in December through the final statement week in January, while holdings under repurchase agreements declined by $34 million. System outright holdings of bankers' acceptances rose by $10 million, and such holdings under repurchase agreements were reduced by $56 million. From Wednesday, December 25, through Wednesday, January 29, System holdings of Government

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CHANGES IN FACTORS TENDING TO INCREASE OR DECREASE MEMBER BANK RESERVES, JANUARY 1964

In millions of dollars; (+) denotes increase, (−) decrease in excess reserves

Factor	Daily averages—week ended					Net changes
	Jan. 1	Jan. 8	Jan. 15	Jan. 22	Jan. 29	
Operating transactions						
Treasury operations*	− 25	− 49	− 69	− 19	+ 177	+ 15
Federal Reserve float	− 239	− 291	− 258	+ 162	− 601	− 1,227
Currency in circulation	+ 30	+ 416	+ 323	+ 293	+ 326	+ 1,388
Gold and foreign account	− 70	+ 17	+ 1	+ 19	+ 6	− 27
Other deposits, etc.	+ 49	+ 94	—	—	+ 26	+ 169
Total	− 255	+ 188	− 5	+ 456	− 67	+ 317
Direct Federal Reserve credit transactions						
Government securities:						
Direct market purchases or sales	+ 11	− 32	− 193	− 394	− 205	− 813
Held under repurchase agreements	+ 58	+ 75	− 11	− 156	—	− 34
Loans, discounts, and advances:						
Member bank borrowings	+ 241	− 194	− 3	− 137	+ 13	− 140
Other	− 1	—	+ 1	—	− 1	− 1
Bankers' acceptances:						
Bought outright	+ 10	+ 4	+ 1	− 1	− 4	+ 10
Under repurchase agreements	+ 32	− 8	− 13	− 22	− 45	− 56
Total	+ 352	− 156	− 217	− 770	− 242	− 1,033
Member bank reserves						
With Federal Reserve Banks	+ 97	+ 32	− 222	− 314	− 309	− 716
Cash allowed as reserves†	+ 345	− 305	− 44	− 127	+ 2	− 129
Total reserves†	+ 442	− 273	− 266	− 441	− 307	− 845
Effect of change in required reserves†	− 145	− 49	+ 403	+ 128	+ 284	+ 621
Excess reserves†	+ 297	− 322	+ 137	− 313	− 23	− 224
Daily average level of member bank:						
Borrowings from Reserve Banks	558	364	361	164	177	325‡
Excess reserves†	785	463	600	287	264	480‡
Free reserves†	227	99	239	123	87	155‡

Note: Because of rounding, figures do not necessarily add to totals.

* Includes changes in Treasury currency and cash.

† These figures are estimated.

‡ Average for five weeks ended January 29, 1964.

securities maturing in less than one year fell by $951 million, and holdings maturing in more than one year were unchanged.

THE GOVERNMENT SECURITIES MARKET

In the market for Government notes and bonds, prices drifted lower in the first few trading sessions of the new year when offerings expanded moderately. Sharper downward price adjustments immediately followed the Treasury's announcement, after the close of business on January 8, of an advance refunding operation. The announcement surprised many investors, who had apparently not expected such a financing until somewhat later in the year, but reaction to the terms of the refunding was generally favorable. Activity both in rights—the issues eligible for conversion—and in the reopened securities, was restrained at first as investors cautiously appraised the offering in the light of a fairly widespread market feeling that interest rates might move upward in 1964. In early trading, prices of rights rose by 1/64 to 5/64, while the reopened 4 and 4¼ per cent bonds declined by 13/32 and 22/32, respectively. Prices of other outstanding intermediate- and long-term bonds moved slightly lower in adjustment to the prospective additional market supply in these maturity areas.

A more confident atmosphere developed during the January 13-17 subscription period. The market was encouraged by its belief that Treasury borrowing needs would be smaller than had been anticipated earlier, since the President's State of the Union Address and the Budget Message forecast a decline in the Federal deficit in fiscal 1965. At the same time, demand spilled into the Government securities market from the corporate bond sector, where the calendar of scheduled flotations remained light. Hence, demand expanded both for rights and for the "when-issued" securities—the two reopened bonds offered in the exchange—while switching activity was also generated. Broad buying interest—including some short covering—also developed for the 2½ per cent wartime issues and for selected issues in the 1965-67 area. Offerings of high-coupon issues, moreover, which appeared against swaps into the reopened 4's of 1970, were readily absorbed. Accordingly, prices of the reopened issues and of outstanding securities moved irregularly higher from January 13 through the end of the month. The advance refunding results announced on January 21 buoyed the market, particularly since subscriptions for the 4¼ per cent bonds had exceeded most expectations. Subsequently, a somewhat more hesitant atmosphere appeared briefly, as the payment date for the advance refunding approached and talk of the possibility of higher interest rates resumed. At the month end, however, a more confident tone reappeared. Official statements suggested that interest rates might remain relatively stable near current levels, and the announcement of the February refunding terms dissipated lingering fears that the Treasury might offer an issue that would compete with the reopened 4's of 1970. Over the month as a whole, prices of Government notes and bonds were generally 1/32 to 12/32 higher.

Treasury bill rates edged a bit higher in the opening days of January, as offerings expanded both from commercial banks—which were disposing of bills purchased in late December for year-end "window-dressing" purposes—and from other investors. At the higher yield levels, demand for bills increased somewhat, and a steadier tone emerged from January 6 through January 13. Nevertheless, interest was rather light at the January 9 auction of $2.5 billion of 159-day tax-anticipation bills—appar-

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ently as attention was devoted to the advance refunding terms announced the night before—and the new bills were sold at an average issuing rate of 3.650 per cent with some bills sold at rates as high as 3.69 per cent in the auction. In the latter part of the month, a lively demand for bills from the holders of the one-year issue—which matured on January 15—as well as from sellers of rights to the Treasury's advance refunding and from other investors exerted some downward pressure on bill rates. By the end of January, rates for outstanding bills were slightly below rate levels prevailing at the end of December. At the last regular weekly auction of the month held on January 27, average issuing rates were 3.501 per cent for the new three-month issue and 3.613 per cent for the new six-month bill—2 and 4 basis points, respectively, below the rates established in the final weekly auction in December. The January 30 auction of $1 billion of new one-year bills resulted in an average issuing rate of 3.680 per cent, compared with an average issuing rate of 3.707 per cent at the preceding month's one-year bill auction. The newest outstanding three-month bill closed the month at 3.50 per cent (bid) as against 3.53 per cent (bid) at the end of December, while the newest outstanding six-month bill was quoted at 3.61 per cent (bid) on January 31, compared with 3.65 per cent on December 31. The June tax bill, which had elicited only modest investor interest when auctioned at an average rate of 3.65 per cent, closed the month at 3.55 per cent (bid).

OTHER SECURITIES MARKETS

Prices of seasoned corporate and tax-exempt bonds generally were fractionally higher in January as activity expanded seasonally. The corporate sector was buoyed by the good receptions accorded the small volume of new bond issues floated during the period, and by indications of a relatively light calendar immediately ahead. Early in the month, a somewhat more cautious atmosphere prevailed in the tax-exempt sector, where a sizable calendar of scheduled flotations took shape and dealers already held large inventories. However, the market atmosphere improved notably during the month, as both new and recently marketed tax-exempt issues moved well. Over the period as a whole, the average yield on Moody's seasoned Aaa-rated corporate bonds was unchanged at 4.37 per cent and the average yield on similarly rated tax-exempt bonds declined by 3 basis points to 3.08 per cent.

The total volume of new corporate bonds reaching the market in January amounted to approximately $335 million, compared with $590 million in the preceding month and $345 million in January 1963. The largest new corporate bond flotation marketed during the month was an Aaa-rated $130 million utility issue consisting of 4⅝ per cent refunding mortgage bonds maturing in 2004. The bonds, which were reoffered to yield 4.53 per cent and are not redeemable for five years, were very well received. New tax-exempt bond flotations in January totaled approximately $915 million, as against $405 million in December 1963 and $840 million in January 1963. The Blue List of tax-exempt securities advertised for sale rose by $19 million (from the revised December 31 level of $490 million) to $509 million on January 31. One of the large new tax-exempt bond issues of the period consisted of $140 million Aaa-rated housing authority bonds. The bonds, which were reoffered to yield from 1.90 per cent in 1964 to 3.50 per cent in 2004, were accorded an excellent investor reception. Most other new corporate and tax-exempt bonds marketed in January were also well received.

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Forecasting Currency in Circulation *

Currency in circulation is one of the more important factors that absorb or supply member bank reserves.[1] The short-term movements in this and other reserve factors which are outside the direct control of the Federal Reserve System are capable of absorbing or adding substantial amounts to the reserves available to member banks.[2] These fluctuations could be disturbing to the credit and money markets and might create mistaken impressions regarding the current posture of monetary policy. The Federal Reserve generally attempts to minimize these problems by offsetting the changes in these reserve factors through appropriate open market operations. In order to assist the Manager of the System Open Market Account in determining and anticipating the need for such operations, forecasts have been prepared at this Bank for many years.[3] An earlier article discussed the techniques for forecasting one of these factors—float[4]—while this article describes forecasting methods for currency in circulation and discusses some of the principal factors causing variations in this factor.

Changes in the amount of currency in circulation affect the reserve positions of member banks, because their accounts with the Reserve Banks are debited when they withdraw currency from the Reserve Banks and credited when they return it.[5] To be sure, the effect on bank reserves of such withdrawals and deposits is not immediate if there is a compensating change in vault cash. But aggregate vault cash holdings, which can be counted in the banks' reserves,[6] do not normally fluctuate greatly over time. Hence, movements of currency in circulation principally reflect the effect on bank reserves of changes in public demand for currency.[7]

PREDICTABILITY OF CURRENCY MOVEMENTS

Of the major operating factors that affect member bank reserve positions, the periodic changes in the demand for currency are the least difficult to predict. Seasonal changes in currency demand are not highly volatile and remain relatively stable from year to year. Unlike float, the amount of currency in circulation is generally not influenced by such erratic factors as weather or work overloads in bank transit departments. Furthermore, the flows of currency to and from Reserve Banks are determined to some extent by the forecasts each member bank makes of its own currency needs, and since these individual forecasts are in turn largely based on past experience, there is a natural tendency toward repetitiveness.

Cyclical or longer run factors do, however, influence the demand for currency. These influences are more dif-

* Irving Auerbach had primary responsibility for the preparation of this article.

[1] As used in Federal Reserve statistics, the term "currency in circulation" includes paper bills and subsidiary coin issued by the Treasury and the Federal Reserve Banks and held either by the public or in bank vaults, but excludes currency held by the Treasury or the Reserve Banks themselves. In comparison, the term "currency outside banks" represents currency in circulation less vault cash held by commercial banks.

[2] The other factors are float, Treasury operations, vault cash (if considered separately from total currency in circulation), and required reserves. Actual changes in each of the major factors affecting bank reserves for the preceding month appear regularly in this *Review* in the article on the money market.

[3] For a description of the role served by the reserve projections in the System's decision-making processes, see Robert V. Roosa, *Federal Reserve Operations in the Money and Government Securities Markets* (Federal Reserve Bank of New York, 1956), Chapter VII.

[4] See "Forecasting Float", this *Review*, February 1963, pp. 30-35.

[5] When Treasury currency increases, the amount of currency in circulation expands without affecting bank reserve positions because the reserves absorbed when this currency is first issued accrue to the Treasury and are later returned to the banking system as the Treasury uses the funds to meet Government expenditures.

[6] In December 1959, member banks were permitted to count part of their vault cash as reserves. Since November 24, 1960, all vault cash has been eligible.

[7] For determining the reserve effects of currency flows, estimating the change in currency outside banks (i.e., currency in circulation minus vault cash) would be more direct and require less effort. However, it has been found that more accurate results can be obtained by estimating changes in vault cash and total currency in circulation separately.

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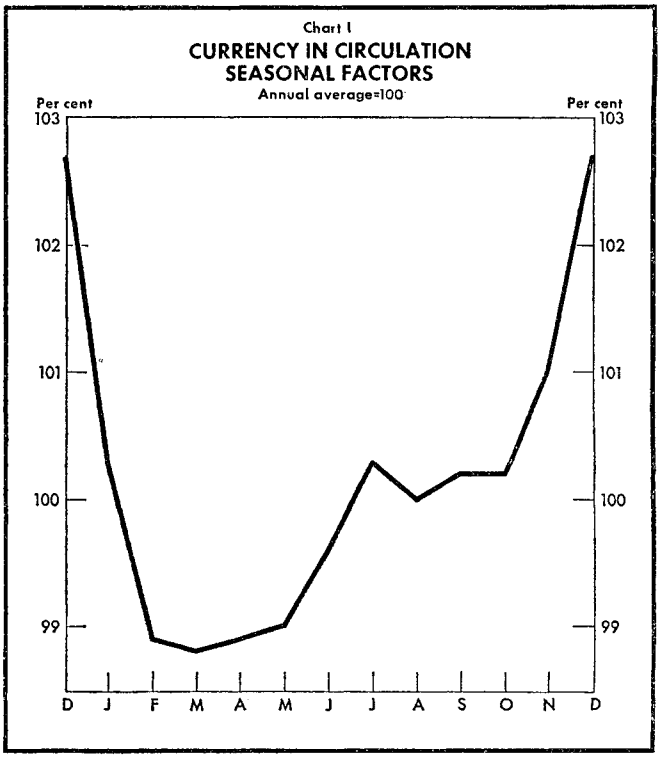
ficult to anticipate than seasonal movements; they do not constitute a major forecasting obstacle, however, since such demand shifts tend to be gradual and spread over a period of months or years. There have been only two periods since the 1920's when unusual influences caused large fluctuations in currency in circulation. The first was during the Great Depression (mid-1931 to early 1934) and the second during World War II. There is some question whether recent larger than usual month-to-month changes may portend a third period of extraordinary changes in demand. This intriguing question—which is easier to come by than the answer—is discussed in a later section.

With these exceptions, the month-to-month fluctuations in seasonally adjusted levels since 1929 have seldom been larger than 3/10 of a percentage point. In terms of today's levels, this means that seasonally adjusted figures for currency in circulation rarely change by more than $110 million from one month to the next. Thus, even if the change in the demand for currency attributable to special factors is not correctly predicted, it is unlikely that forecasts of the current month's level will be off by more than about $100 million. Furthermore, whatever error exists will probably be distributed over the daily estimates for the month as a whole rather than be concentrated in a brief period. With Federal Reserve float, in contrast, forecasting errors of as much as $200 million in one week are fairly common.



FORECASTING TECHNIQUES

The technique used in forecasting the daily changes in currency in circulation is almost identical to that used for estimating float movements. Seasonally adjusted monthly averages are derived by extrapolating the observed trend for recent months and multiplying the results by an appropriate seasonal factor for each month. Intramonthly patterns are then applied to these adjusted monthly totals, and the resulting daily levels are adjusted by an intraweekly term. Finally, daily changes are derived from these estimated levels and compared with the actual changes for analogous days in previous years. Whenever the current estimate differs widely from the figures for past years and there appears to be no ready explanation, the estimates are re-examined and sometimes adjusted.

DERIVING THE BASE LEVEL. The basic demand for currency is influenced by a number of factors. The most important of these is the growth of business activity and of population, although other influences—general habits with regard to the amount of pocket money carried, the degree of public confidence in the banking system, shifts in bank policies with respect to vault cash, and hoarding currency for tax evasion—can at times also have a significant effect on the demand for currency. Even the relationship between currency demand and the growth in population and economic activity is not precise, however, and the influence of some of the other factors is frequently difficult to measure or to predict. The estimated base level for short-run forecasts of changes in currency, therefore, is derived by using a straight-line projection of the current rate of increase. Only in long-range forecasts is an attempt made to relate the demand for currency to longer run factors of varying predictability.

OBTAINING THE MONTHLY AVERAGE LEVELS. The average estimated level of currency outstanding for any given month is prepared by applying the appropriate seasonal factor to the estimated base level.[8] As Chart I indicates, there are strong seasonal influences on the demand for currency; the three most pronounced are summer vaca-

[8] The seasonal factors are obtained by using the Census X-9 computer method. This program provides moving seasonals, but the patterns have not changed significantly from year to year.

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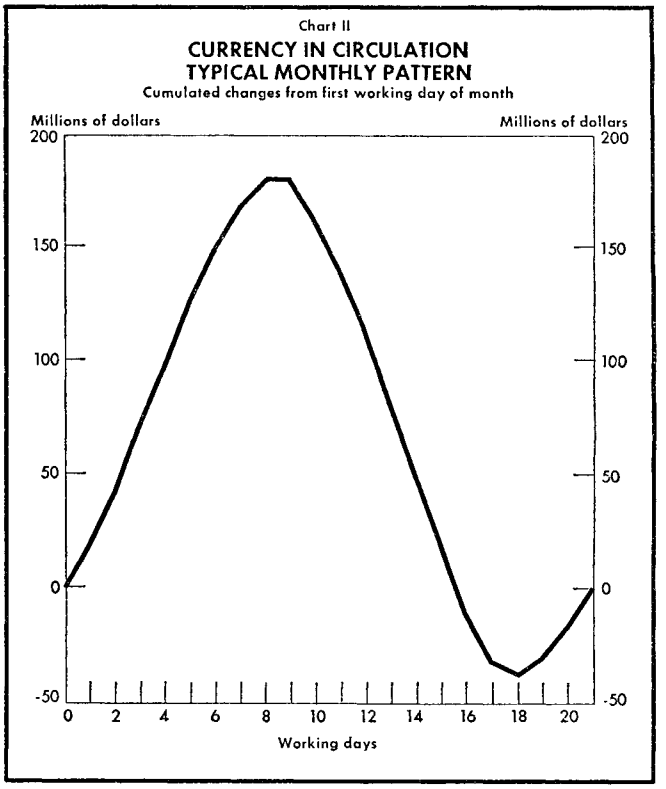
tions, Christmas, and the usual business lull during the winter months.

The amount of currency in circulation is at its annual peak in December at the height of the Christmas shopping rush. It declines sharply during January and February—as cash spent by holiday shoppers and vacationers flows back to the banks—and more moderately in March. The revival of economic activity in the spring, combined with Easter spending, stimulates a modest rise in April and May. Demand becomes much larger in June with the advent of the vacation season and the Independence Day holiday, and for July the seasonal factor reaches a secondary peak of 100.3. The needs for currency ease off in August, but with the beginning of fall they increase steadily. The monthly seasonal factors rise from 100.2 in October to 101.0 in November and then to 102.7 in December.[9]



INTRAMONTHLY PATTERNS. Within any given month, the primary influences on the demand for currency are payrolls and bills. For both purposes the increase in demand tends to be concentrated at the turn of the month. Thus, as shown in Chart II, currency begins to flow out from the Reserve Banks on or about the eighteenth working day of the month, partly because the banks are then increasing their stock of currency in anticipation of the public's needs. By the eighth working day of the following month, the outflow typically reaches the monthly peak and cash begins to flow back. The net outflow from one month's low to the next month's peak generally amounts to about $220 million.

Demands within a month are also influenced, however, by holidays and by the seasonal forces noted earlier. As a result, each month has its own pattern, and there is considerable variation among them. In January, the post-Christmas return flow outweighs all other influences. The patterns for May, June, July, and September are skewed by the demands accompanying the Memorial Day, Independence Day, and Labor Day holidays. Thanksgiving has a marked effect on the November pattern, and that for December, of course, primarily reflects Christmas.

As a first step in developing a pattern for a particular month, a chart is plotted showing each working day's value for that month over at least the five preceding years as a percentage of the monthly average, after adjusting the daily totals by an intraweekly "seasonal" to remove the influence of the day of the week. The mode of each day's observations is then selected by inspection. If the points do not fall within a narrow area, greater weight is given to the observations for the most recent years. These modal points are then adjusted to make their average value equal to 100. The results are multiplied by the estimated daily average for the month in order to obtain an estimated level of currency in circulation for each day of the month.

The most typical of all the monthly patterns, that for August, is shown in Chart III. Even in that case, it is obvious that at the beginning and the end of the month the points plotted for the past five years are widely dispersed. The differences at the beginning of the month cannot be readily explained. Those at the end are related to the Labor Day holiday. In each instance, the upturn starts on the Monday prior to the holiday, whatever that date may be.

HOLIDAYS. Since holidays are usually determined by calendar days and the monthly charts are based on the working days, a major holiday tends to obscure the alignment of the daily observations on the charts. To overcome this problem, separate charts are prepared for each ma-

[9] The movements of the seasonal factors are small in relative terms but large in absolute terms, since the amount of currency in circulation today exceeds $36 billion.

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jor holiday. The data are then aligned in terms of the days preceding and following the holiday, and the modal points for the days influenced by the holiday are selected. These points are superimposed on the monthly chart and integrated into the other observations.

The effect of holidays on the demand for currency varies, depending on how generally the holiday is observed, the amount of increased spending associated with the day, and the proximity to a week end. The special demand for currency generated by the holiday generally begins to develop about five days in advance and extends for one day after the holiday itself. The duration of the return flow varies so widely that it is not readily subject to generalization. Holidays frequently serve as the starting point for a large seasonal change in cash demands; when this occurs, the post-holiday movement cannot be isolated from other seasonal influences.

ADJUSTING FOR INTRAWEEKLY FACTORS. To adjust the forecasts for the influence of the day of the week, the appropriate intraweekly arithmetic term is added to the estimated level for each day that is read off the monthly chart, and estimated daily changes are then computed. Absolute, rather than relative, values are used for the intraweekly factors, because they are a function of the day of the week and are not closely related to changes in the size of currency movements or to intramonthly, seasonal, or trend forces.

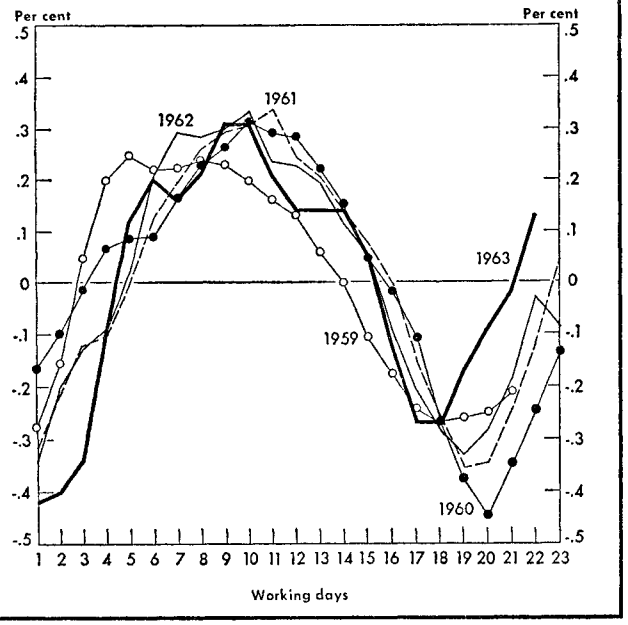
The intraweekly currency factors have been modified considerably since banks were permitted to count their vault cash as part of their reserve balances in 1960. Previously, there was a heavy outflow of currency from the Reserve Banks on Thursdays, when the banks prepared to meet large cash withdrawals on Fridays for payrolls and week-end needs. Now the Thursday outflow is down to only $5 million, since banks no longer have an incentive to keep their vault cash at minimum levels in order to maximize their reserve balances. On Fridays, about $30 million usually flows back as banks with excess currency return the cash to avoid having it in their vaults over the week end. Cash withdrawals on that day are negligible, because most banking offices would receive supplies too late to meet their depositors' needs.

On Mondays, there is a $25 million outflow to banks, probably to replenish the vault cash holdings of banks that experienced heavy pre-week-end drains. The final two days of the Federal Reserve statement week—Tuesday and Wednesday—have no consistent pattern. In the past, a large decline in currency outstanding occurred on Tuesdays, when the banks returned the cash deposits they had received on Mondays in order to replenish their reserve accounts.

Chart III

CURRENCY IN CIRCULATION
AUGUST INTRAMONTHLY PATTERN

Percentage deviation from working-day average; adjusted data, 1959 - 63



ADJUSTING FOR FORECASTING ERRORS. The daily forecasts of changes in the amount of currency in circulation are reviewed as actual figures become available. If there was a large error in the estimate for a particular day, a decision must be made whether to alter the estimated changes for the days ahead—in order to keep the same net outflow or inflow over a week or a month—or to assume the level has changed. Ordinarily, the subsequent daily estimates are routinely adjusted to retain the same net flow for the period, unless sufficient evidence has accumulated to indicate that the original target level for the longer period is off. Determining what is "sufficient evidence" requires considerable knowledge of the behavior of the data, but even with that the correct choice is not always made.

TRENDS IN THE BASIC DEMAND FOR CURRENCY

Most of the long-term increase in currency, as noted earlier, is accounted for by growth in population and in the dollar volume of economic transactions. But the rates of expansion have seldom been parallel over consecutive long periods (see Chart IV). During the early 1930's, when bank failures reached record levels and fearful de-

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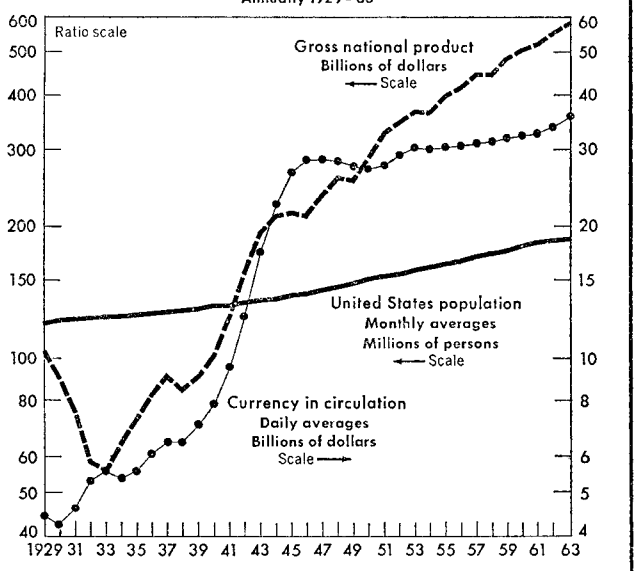
Chart IV

CURRENCY IN CIRCULATION, GROSS NATIONAL PRODUCT, AND TOTAL POPULATION

Annually 1929 - 63



Note: Gross national product estimated for fourth quarter 1963, and population estimated for October - December 1963.

positors preferred cash, currency outstanding increased rapidly despite the economic contraction. In World War II, the sharp rise in prices, the large number of transient soldiers and defense workers, and hoarding to cover up black market activities and tax evasion combined to produce a larger relative increase in currency than in gross national product. During most of the postwar period, on the other hand, the increase in currency has been considerably slower than the growth in economic activity partly because redundant amounts put into circulation during the war were gradually absorbed into active use. Most recently—beginning in late 1961—the demand for currency began to accelerate, suggesting that some special factors may again be at work.

Over the past two years the rate of growth in GNP has been considerably less than the rates experienced during the Korean war years and in 1955 and 1959, which were years of economic boom. Yet the average annual increase of currency in circulation in 1962 and 1963 (4.5 per cent) was more than twice the 1959 and 1950-53 increases and over six times the 1955 increase; moreover, it was triple the 1.5 per cent average annual rate of increase for the 1950's as a whole. As a result, the postwar decline of currency in circulation as a percentage of GNP virtually stopped in 1963. At the end of 1946, currency in circulation was equal to 13.4 per cent of GNP for that year. By 1962 the ratio had declined to 6.1 per cent, and it remained there in 1963. Nevertheless, this is a fairly high level by historical standards—the 1929 ratio, for example, was 4.3 per cent. Measured as a proportion of the money supply, currency in circulation has actually begun to show a modest increase. The significance of this observation, however, needs to be qualified—a considerable proportion of the recent large increases in bank credit has been reflected in rising time deposits rather than in either demand deposits or currency in circulation.[10]

There is no single clear-cut explanation of the recent increase in the demand for currency, but several factors that may have contributed are worth noting. For one thing, economizing on the use of cash may have gone as far as is possible within present institutional patterns. If so, any given increase in economic activity now or in the near future may require a somewhat larger rise of currency in circulation than formerly.[11]

A second factor is undoubtedly the increased amount of vault cash currently being held by banks. This increase may, in turn, have several causes: a rising demand for currency on the part of the general public and hence a need for the banks to maintain larger working balances; an attempt by the banks to lay in additional supplies of coin in the face of the current coin shortage; and possibly a continuing adjustment to the change in the Federal Reserve Act which permitted banks to count vault cash as part of their legal reserves. However, if the $480 million increase in vault cash during 1962 and 1963 (9 per cent per year) is subtracted from the increase in total currency in circulation, the absolute increase in that part of the total held by the public is still substantially larger than in any other postwar year except 1952 and 1953. In comparison with those two previous years of rapid growth in the public's demand for currency, the current increase is somewhat greater in absolute terms but about equal in relative terms.

A third factor is the rapid rate of growth in the demand for coins, in conjunction with the phenomenal expansion in the use of vending machines. There has also been a

[10] For a discussion of the long-range relationship between currency and the money supply, and the factors influencing this relationship, see Phillip Cagan, *The Demand for Currency Relative to Total Money Supply*, (Occasional Paper 62, National Bureau of Economic Research, 1958).

[11] Unfortunately, it is not feasible to measure the rate of turnover of currency in circulation. If this could be done and a recent substantial rise in that rate be established, the point might become more nearly subject to proof, although no obvious upper limit to such a velocity increase necessarily exists.

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large increase in the demand for silver dollars, apparently reflecting the hope that a further rise in the price of silver will make it profitable to sell these coins as bullion. Coin shortages themselves encourage hoarding, thus adding to the demand. Coins, however, usually represent only some 8 per cent of currency in circulation.

But the increases in vault cash and coin are only part of the story, for the expansion in the public's demand for bills also appears to have exceeded the rise that might be attributed to increased transactions needs. Two explanations for this new demand have been suggested. One is the marked increase in the relative number of teen-agers, many of whom earn and spend quite a bit of money but few of whom have checking accounts. The proportion of youngsters in the 15-19 age group in the total population rose from 7.5 per cent in 1961 to 8.0 per cent in 1962 and to 8.2 per cent last year. Between 1950 and 1956, in contrast, the proportion of teen-agers in the total population declined, and it rose by only 1/10 to 3/10 of a percentage point annually from 1956 through 1960.

Another suggested explanation is an increase in the demand for currency by would-be income tax evaders who seek cash payments in attempting to conceal current income or who are converting into cash other more readily traceable assets in what would probably be a vain attempt to hide past delinquencies. It is possible that these attempts may be related to recent Congressional and administrative moves to enforce fuller reporting of certain kinds of income.

CONCLUDING COMMENT

It is readily apparent that forecasting currency, while a highly technical problem, cannot be considered in isolation from the more general monetary, economic, and institutional factors that affect buying and spending habits. For this reason and because of the inherent variability of the data, the accuracy of the forecasts should not be expected to attain perfection, although further refinements and other improvements of the forecasts are subjects of constant study.

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Fiftieth Anniversary of the Federal Reserve System—The Banking System in 1914

In early 1914, the nation's commercial banking system was very different from the system we know today. For one thing, there were almost twice as many commercial banks—25,500, compared with 13,400 today. About 7,500 had national charters; the remaining 18,000 were chartered by states.

Demand deposits and currency totaled $11.6 billion in 1914, compared with the current money supply of about $155 billion. Currency then included national bank notes, gold coin, and gold certificates—all of which have now disappeared—as well as the still-familiar United States notes, silver certificates, and silver and minor coins. Federal Reserve notes, the bulk of today's currency, were of course unknown.

Banking services were neither as flexible nor as diversified as they are today. Bankers' acceptances, which were widely utilized in Europe to finance domestic and foreign trade, could not be created by national banks until passage of the Federal Reserve Act, nor by New York State banks until shortly afterward. The earlier restriction had weighed particularly on banks in New York City, because one third of the nation's exports and more than one half of its imports passed through this port.

Markets in which banks could readily obtain and dispose of short-term earning assets were poorly developed by today's standards. Most of the relatively small amount of United States Government securities held by commercial banks was unavailable for trading, because these securities were required as legal backing for the outstanding notes of national banks.

Even in 1914, payments by check were estimated to account for about 90 per cent of all business payments. Local clearing-house arrangements were efficient, but the collection of out-of-town checks often proved slow and costly. Many banks, particularly those outside financial centers, deducted exchange fees from the face value of checks drawn on their deposits. To avoid these charges, banks sought to route checks only to correspondent banks, and some of the travels of individual checks through these correspondent links proved absurdly time consuming.

Lending consisted primarily of short-term commercial financing based on promissory notes or secured by marketable staples. These notes were generally not very liquid; correspondent relationships—under which smaller banks could rediscount this paper with larger banks when pressed for funds—were of extreme importance in providing what liquidity there was. Correspondent deposits and discounting concentrated in money centers—especially New York City—where the banks did not themselves have ready access to a source of liquidity in times of stress. One of the purposes of the new Reserve System was to fill this void. As the Reserve Bank Organization Committee, established under the Federal Reserve Act, began to deliberate on how many Reserve Districts to create (the law specified a maximum of twelve and a minimum of eight) and where to locate the Federal Reserve Banks, it was certain that New York City would have one of the Federal Reserve Banks.

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