FEDERAL RESERVE BANK OF NEW YORK

MONTHLY REVIEW

MAY 1970

Contents

Volume 52 **No. 5**

The Business Situation

The slowdown in economic activity in the first quarter of 1970 was reflected in both a decline in real GNP and an increase in unemployment. At the same time, price and cost pressures continued to be severe. Toward the end of the quarter, there were some tentative signs of a bottoming-out in economic activity and of a slight moderation in price pressures. Industrial production increased in March for the first time since last July, and housing starts posted a second successive monthly gain. At the same time, price increases at the wholesale level showed some signs of lessening in March and April.

More broadly, the economic outlook remains quite strong despite a number of uncertainties, including the recent sharp drop in the stock market and developments in Indochina. In April the pay increase for Federal employees and the boost in social security payments began to add to spendable income, and the income tax surcharge is due to expire at the end of June. Moreover, recent surveys continue to suggest that a sizable growth in capital spending is likely. The underlying strength of the economy and the prospect of continued large wage settlements point to the need for persistence in the fight against inflation.

GROSS NATIONAL PRODUCT

The nation's total output of goods and services, according to preliminary estimates, declined again in the first quarter of 1970, after allowing for the continued sharp increase in prices. Real gross national product (GNP) fell at an annual rate of 1.6 percent, following the previous quarter's fractional decline. Despite this further slowing in real GNP, the implicit price deflator accelerated slightly from a 4.7 percent rate of growth in the final quarter of last year to the first quarter's rate of 5.0 percent. While this information scarcely constitutes evidence that inflation has worsened, it does cast doubt on the view that prices are beginning to respond favorably to moderating demand. Expressed in current prices, GNP continued to expand, but the gain of $8.2 billion (see Chart I) was the smallest since the first quarter of 1967. As in the fourth quarter of last year, the expansion in current-dollar GNP was depressed by a sharp drop in inventory accumulation. Final demand, that is, GNP less inventory change, actually rose by a slightly larger amount in the first quarter than in the October-December period. The first-quarter increase in final demand was centered in consumer spending for nondurable goods, in business fixed investment, and in state and local government purchases.

The inventory component exerted a $4.8 billion drag on the expansion of GNP. A slowdown in inventory spending can reflect either deliberate efforts to correct for excesses in stocks or an unexpected bulge in sales. In the first quarter, the former appears to be a more plausible explanation for most of the behavior of inventories. The business inventory data for January and February, on which these preliminary inventory estimates are based, indicate that firms in the durable goods sector at both the manufacturing and trade levels have attempted to correct the imbalances that developed near the end of 1969. This behavior has been particularly evident in the automobile industry, where the stock of unsold cars has been reduced substantially since late last year. On the other hand, consumer spending on nondurable goods showed such strength that some of the slowdown in inventory accumulation may have reflected unexpectedly strong sales.

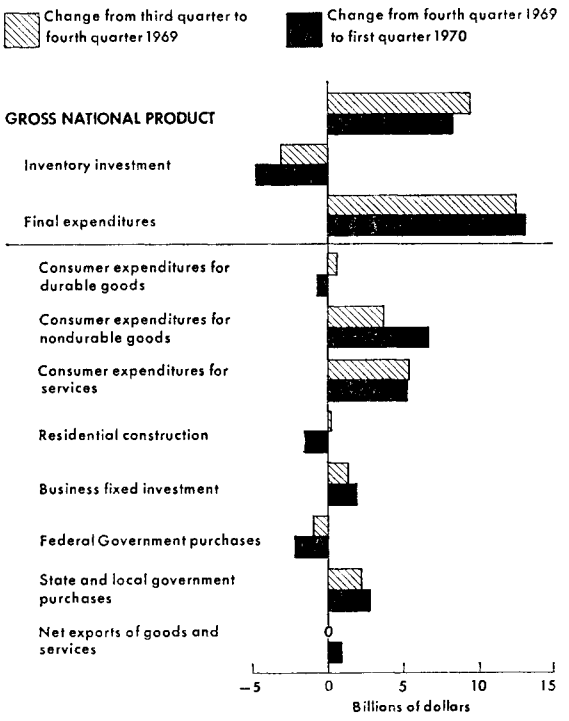
The reduction of the income tax surcharge from 10 percent to 5 percent at the beginning of 1970 contributed substantially to the first-quarter gain in disposable personal income. While the first-quarter rise in pretax income was only $0.2 billion more than that for the preceding quarter, spendable income rose by $3.9 billion more in the first quarter of 1970 than in the previous quarter. The first-quarter gain in disposable income was

accompanied by a fairly large increase in personal consumption expenditures, and the saving rate changed very little. The boost in consumer spending reflected the largest increase in expenditures on nondurable goods since the first quarter of 1968. Spending on services continued to expand at much the same rate as in recent quarters, but expenditures for durable goods declined slightly. Much of the weakness in durables can be seen in unit auto sales, which dropped from a seasonally adjusted annual rate of 8.1 million units in the final three months of 1969 to a 7.4 million unit pace in the first three months of this year. The poorest sales performance occurred in January, however, when dealer deliveries were at a 6.8 million unit rate. Auto sales recovered strongly in February to a 7.9 million unit rate, then fell back in March to a 7.4 million unit pace. In April the sales pace was a little better than the previous month's rate.

Investment in plant and equipment continues to expand, in agreement with the surveys of business capital spending intentions. Most of the first-quarter increment resulted from a fairly sizable rise in spending on structures. The unusually small increase in expenditures on equipment probably reflected the General Electric strike. Recent survey findings and actual spending results have yet to show the cutbacks that might normally be expected in light of falling profits, plant operating rates substantially below preferred levels, and tight credit conditions; apparently, efforts to check the steep climb in labor costs continue to outweigh such inhibiting factors. The McGraw-Hill spring survey indicated a 9 percent increase in 1970 expenditures on plant and equipment. Although this represents a slightly smaller gain than the Department of Commerce-Securities and Exchange Commission survey had indicated earlier in the year, the 9 percent boost exceeds, though narrowly, that which had been suggested by the fall McGraw-Hill survey. Upward revision of spending plans by nonmanufacturing firms has tended to offset some cancellations or deferrals by manufacturers.

Spending on residential structures declined in the initial quarter of 1970 and remained substantially below the high attained at the outset of 1969. Housing starts were also down for the quarter, but the rate moved up from the very low January figure with some vigor in the latter two months of the period. Despite the February and March advances in starts, the near-term outlook for home building appears considerably short of buoyant. The rate of starts is still substantially below the pace recorded in early 1969 and the rate of permits issued for new homes fell off in March, though this series has been unusually wobbly of late. The availability of funds for mortgages has shown some slight improvement in recent months,

Chart I
RECENT CHANGES IN GROSS NATIONAL PRODUCT AND ITS COMPONENTS
Seasonally adjusted



Source: United States Department of Commerce.

but land, labor, and financing costs continue to soar, pushing the price of homes beyond the means of a growing proportion of young families.

The increase in state and local government spending was larger in the first quarter than in either of the preceding two quarters, although these governments continue to experience financing difficulties. Federal Government expenditures dropped by $2.1 billion in the first quarter, the largest decline since the spring of 1954; a cutback in defense outlays accounted for most of the fall. Upward pressures in expenditure programs continue to accumulate, however, and the Federal employees' pay increase, retroactive to December 27, will also contribute to higher Federal spending.

The remaining GNP component, net exports, added $1.0 billion to the expansion in total spending. In recent quarters, the growth in exports of goods and services has exceeded that for imports; first-quarter net exports were at the highest level since late in 1967.

INDUSTRIAL PRODUCTION

Like real GNP, industrial production was lower in the first quarter of this year than in the final quarter of 1969, but the monthly data on industrial output showed a slight rise in March following a small decline in February and a sizable drop in January. This pattern raises the possibility that production, after a seven-month downward drift in the overall index, may be regaining some strength. The decline in output from last July to this February was gradual, and never developed into the widespread, sharp cutbacks in production that have been associated with post-World War II recessions. The total decline in the July-February period was 2.7 percent, exceeding narrowly the 2.4 percent drop in the index that had occurred during the mini-recession of early 1967. Subsequent to similar extended periods of decline, a one-month rise has usually been followed shortly by an upswing. The March figures, however, are still preliminary, and past experience, of course, need not be repeated.

Although the resumption of operations at General Electric plants, following a long strike, contributed positively to the production index in March as well as in February, the March rise in the index reflected mainly sizable gains in the automotive products and steel components, two industries that are highly sensitive to cyclical fluctuations in demand. Iron and steel production rose 2.4 percent in March, the largest gain since last June, and the raw steel output figures suggest another increase in April. As long as the export demand for steel products remains healthy, as is expected, the near-term outlook for the industry is primarily dependent upon the auto situation.

The output of motor vehicles and parts advanced by 5.6 percent in March, the first increase since last July. The same pattern is evident in the unit figures, as auto production fell from a seasonally adjusted annual rate of 9.1 million units last July to a 6.5 million unit pace in February, then rose to a rate of 7.1 million units in March. As sales have shown some steadiness, inventories have been brought down further in recent months. The stock of unsold cars at 1.4 million units was at the lowest level, on a seasonally adjusted basis, for any month since the summer of 1968 with the exception of July 1969, when dealer inventory holdings were at about the same level. With inventories coming within acceptable limits and the demand for new autos at least holding firmly at recent levels, production schedules for the April-June period indicate that output might continue rising. Nonetheless, actual production in April ran below the planned rate, apparently reflecting plant shutdowns necessitated by striking teamster locals rather than an unexpectedly poor sales performance. In the months immediately ahead, the production figures will no doubt show adjustments in anticipation of a possible strike by auto workers when the contract expires in September.

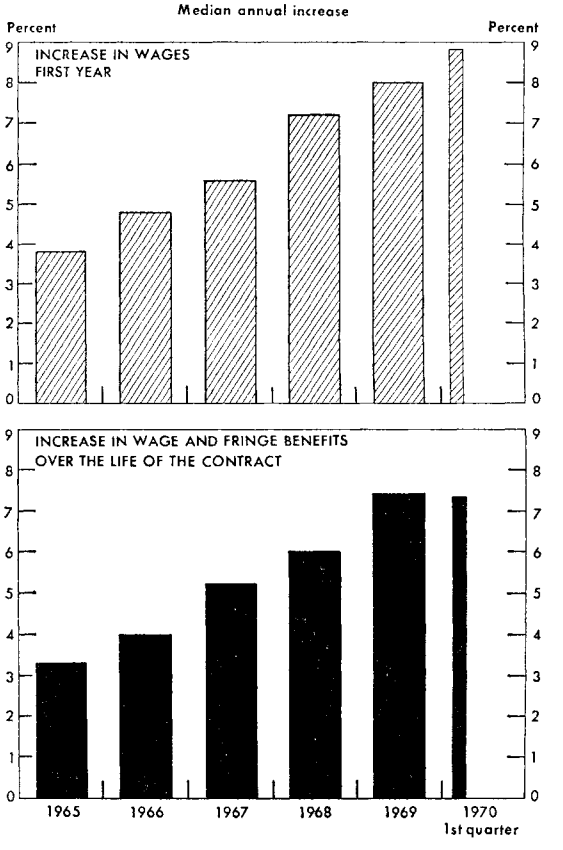
WAGE AND PRICE DEVELOPMENTS

The slowdown in economic activity has been accompanied by easing in the demand for labor, but labor costs continue to rise steeply, and recent labor contract settlements indicate that these costs will remain a source of intense pressure on prices in coming months. Summary data on major collective bargaining settlements for the 1965-69 period bring into sharp focus the uptrends in first-year wage increases and in the wage-benefit package over the life of the contract (see Chart II). Preliminary first-quarter data for 1970 indicate a further boost in the

Chart II

MAJOR LABOR CONTRACT SETTLEMENTS

Median annual increase



Source: United States Department of Labor.

first-year wage gain, while the overall wage-benefit increase remained about the same as last year's median. First-quarter agreements covered fewer than 700,000 workers of the approximately five million covered by contracts expiring this year. The relatively small number of workers receiving large first-year wage increases as well as declines in overtime work in some high-wage industries have thus far limited the impact of such settlements on labor compensation per man-hour in the private economy, but the increase has been rapid. Combining the trend in labor compensation with the poor performance of productivity, unit labor costs have been accelerating and rose at an annual rate of 8 percent in the first quarter, the largest advance for any quarter in fourteen years. Sizable first-year wage gains will tend to offset the effects of any improvement in productivity. In the contract negotiations this year, workers are seeking to maintain an increase in real wages and to catch up with other workers who have already obtained generous settlements. As economic activity slows, the easing of pressures in the labor market should tend to reduce the size of union and nonunion wage settlements, and the easing of demand pressures will make it more difficult for firms to pass along additional labor costs through higher prices. Nonetheless, we cannot expect slower economic activity to return the rate of wage increase in the near future to the noninflationary pace of long-term productivity.

Although industrial wholesale prices continue to rise at an excessive rate, there are some indications that the rate of increase may be slowing. According to preliminary data, which have been subject to upward revisions in recent months, industrial commodities prices rose at a 3.1 percent annual rate in April. The April gain was equal to that for March, but it was below the rates recorded in the first two months of the year and the average monthly increase registered last year. In addition, cyclically sensitive materials prices have tended to ease downward in recent months, possibly foreshadowing a further slowing in the industrial commodities component. Agricultural products prices fell in April, causing the overall wholesale price index to fall. The agricultural component often moves erratically, however, and the overall index may thus be of questionable value in discerning the trend in wholesale prices.

Consumer prices rose at a 6.3 percent annual rate in March. The March advance in the index exceeded, though narrowly, the average monthly gain of 6.1 percent recorded through 1969 and was noticeably higher than the 5.5 percent rate of increase registered for the first two months of this year. Reflecting sharp boosts in mortgage charges and medical care costs, the gain in services prices was extraordinarily large, and the cost of nonfood commodities climbed at the fastest pace since last November. On the other hand, a very small rise in food prices softened the advance in the overall index. After adjustment for seasonal variation, the consumer price index still shows no solid evidence of a slowdown in its rate of increase. Even though the adjusted figures indicate a rise of 4.8 percent for March, the rate of gain through the first three months of 1970 on this basis is essentially the same as the average monthly rate in 1969.

The Money and Bond Markets in April

Prices drifted lower in most sectors of the bond market during the first part of April and then dropped sharply after midmonth, in part because indications of economic strength led market participants to revise their expectations of the interest rate outlook. The confidence in lower rates that had developed in late March when the banks' prime lending rate was cut was tested by a record outpouring of new corporate issues. The previously announced $1.6 billion bond offering by the American Telephone and Telegraph Company led to upward rate adjustments on other new and outstanding securities when specific terms of the issue were made known on April 13. Concern also mounted among many market participants that the economy might resume its expansion before inflationary tendencies were contained, especially since fiscal policy seemed to be tilting again toward the expansionary side. A somewhat firmer money market suggested that the monetary authorities were alert to the dangers of overly rapid monetary expansion. While this augured well for the long-run health of the bond markets, dealers had to work off heavy inventories of Treasury bills built up in anticipation of greater investor demands than materialized. Accordingly, short-term rates moved rapidly higher in late April, contributing to the adjustment under way in the bond market in advance of the Treasury's May financing.

With prices of Government securities falling sharply after midmonth, there was growing apprehension concerning the terms and the effect of the Treasury's May refunding in that market as the April 29 announcement date approached. Initial reaction was generally favorable to the terms on which the Treasury's new offerings were made.

The monetary and bank credit aggregates expanded strongly in April, and the Federal Reserve interposed some resistance to the acceleration that developed. A number of unusual developments appear to have contributed to unexpected deposit strength. Normal financial clearings were disrupted early in the period by the effects of European bank holidays and by the aftermath of labor disputes and unseasonable snowstorms, which delayed mail delivery. The early April rise in the aggregates was slow to reverse, however, when these special factors disappeared. In consequence, the System allowed modestly firmer money market conditions to develop during the last half of the month. For the three months ended in April the money supply grew at a seasonally adjusted annual rate of 5 percent, while the adjusted bank credit proxy advanced at a rate of 7 percent and time deposits at 11 percent.

The effective rate on Federal funds averaged 8.1 percent in April, compared with 7.7 percent in March. The rates on three- and six-month Treasury bills closed the month at 6.93 and 7.18 percent, up 55 and 70 basis points from a month earlier. The bid rate on ninety-day bankers' acceptances climbed sharply in several steps to 8¼ percent by April 30 from 7½ percent at the end of March. Rates also moved up on the short maturities of directly placed commercial paper but were unchanged on longer maturities and on dealer-placed paper over the month.

BANK RESERVES AND THE MONEY MARKET

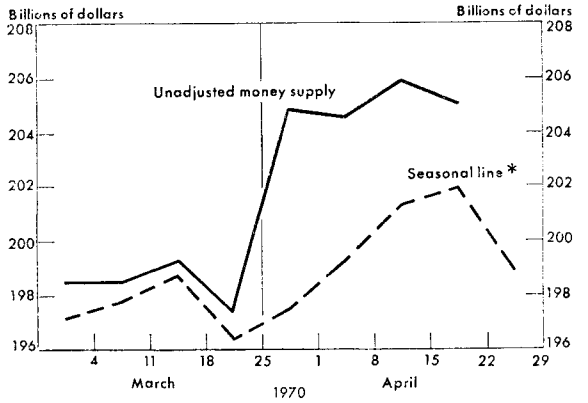
The behavior of the monetary aggregates in April involved a number of uncertainties. Typically, both the money supply and the bank credit proxy tend at times to deviate from average seasonal patterns or longer run growth trends on a week-to-week or even month-to-month basis. Because of special factors at work in late March, April turned out to be a month of unusual uncertainty.

The rise in the money supply in the week ended on April 1 was extraordinary in relation to past seasonal behavior (see Chart I).[1] A major factor responsible for this was a very sharp drop during that week in cash items in the process of collection, which represent a deduction from gross demand deposits in arriving at the demand deposit component of the money supply. In part, this

[1] Since there is no growth factor incorporated in the seasonal line, some difference between the two would usually result if the actual series exhibited a fairly regular growth. The chart shows this type of divergence during most of March.

Chart I

THE MONEY SUPPLY AND SEASONAL EFFECTS



* This line is the average of the seasonally adjusted weekly figures for February multiplied by seasonal factors for March and April, beginning with the week of March 4. It indicates what the unadjusted money supply would have been if just the influence of the seasonal factors—which are drawn from the behavior of the money supply during comparable weeks of previous years—had been operative.

drop was attributable to the closing of European money markets on the Friday and Monday surrounding Easter Sunday.[2] This temporary phenomenon was quickly reversed after the Easter weekend so that cash items in the process of collection rose. However, the money supply did not fall back as promptly as one would have expected after this and other factors affecting the collection system faded in importance.

The average effective rate on Federal funds moved to a higher plateau in the last half of April (see Chart II), as System open market operations offered some resistance to the rapid growth in the money supply and bank credit. Contributing to the firming of the Federal funds rate were the heavy financing needs of Government securities dealers, who held unusually large inventories during much of the period. In addition, the money center banks experienced substantial reserve drains when a large rise in required reserves coincided with deposit outflows and sizable loan demand associated with the mid-April individual and corporate income tax date. Average borrowings by member banks at the discount window totaled some $870 million in April (see Table I), down slightly from the $896 million average in March, while net borrowed reserves declined by an average of $98 million since excess reserves also increased by about $70 million over the period.

The average basic reserve position of the forty-six major money center banks showed virtually no change at the start of the month but then began to deteriorate, with the deficits rising to a record $7.5 billion and $8.0 billion, respectively, in the statement weeks ended on April 15 and April 22. An easing of the deficit occurred during the final statement week (see Table II) in a pattern which has recurred in the past several years. Substantial declines in United States Government balances and private demand deposits and a sharp rise in lagged reserve requirements largely accounted for the deepening of the average reserve deficit of the money center banks during the week of April 15. A sizable inflow of Treasury deposits took place in the following week as tax collections were made, but this was more than offset by a continuation of a buildup in loans and investments which began toward the close of the preceding week.

System open market operations provided $209 million in reserves during April primarily through repurchase agreements involving Government securities. Reserves amounting to $128 million were also supplied by operating transactions, as a large increase in float was only partially offset by other transactions which drained reserves. Required reserves increased by $650 million over the month.

Preliminary data for the monetary aggregates in April show a seasonally adjusted annual rate of growth in the money supply of 13.7 percent following a 13.2 percent rise during March. Over the three months ended in April the seasonally adjusted annual rate is estimated at 5.4 percent, compared with an increase of 4.0 percent in the three months ended in January. The adjusted bank credit proxy grew at a seasonally adjusted annual rate of 7.0 percent in the quarter ended in April, compared with a rate of 3.3 percent in the three months ended in January.

THE GOVERNMENT SECURITIES MARKET

Activity in the market for Treasury coupon issues was rather subdued in April. Based in part on the expectation that the Treasury's May refunding would be a rights offering, some demand developed for shorter dated securities during the first half of the month and prices on issues due within two years improved over that interval. During this same period, prices on longer maturities drifted irregularly lower and at midmonth began to fall sharply in conjunction with the rate adjustments in the corporate bond market following the announcement of the AT&T offering terms. Also around midmonth, dealers began to readjust their positions in preparation for the May re-

[2] For some further details, see pages 104-5.

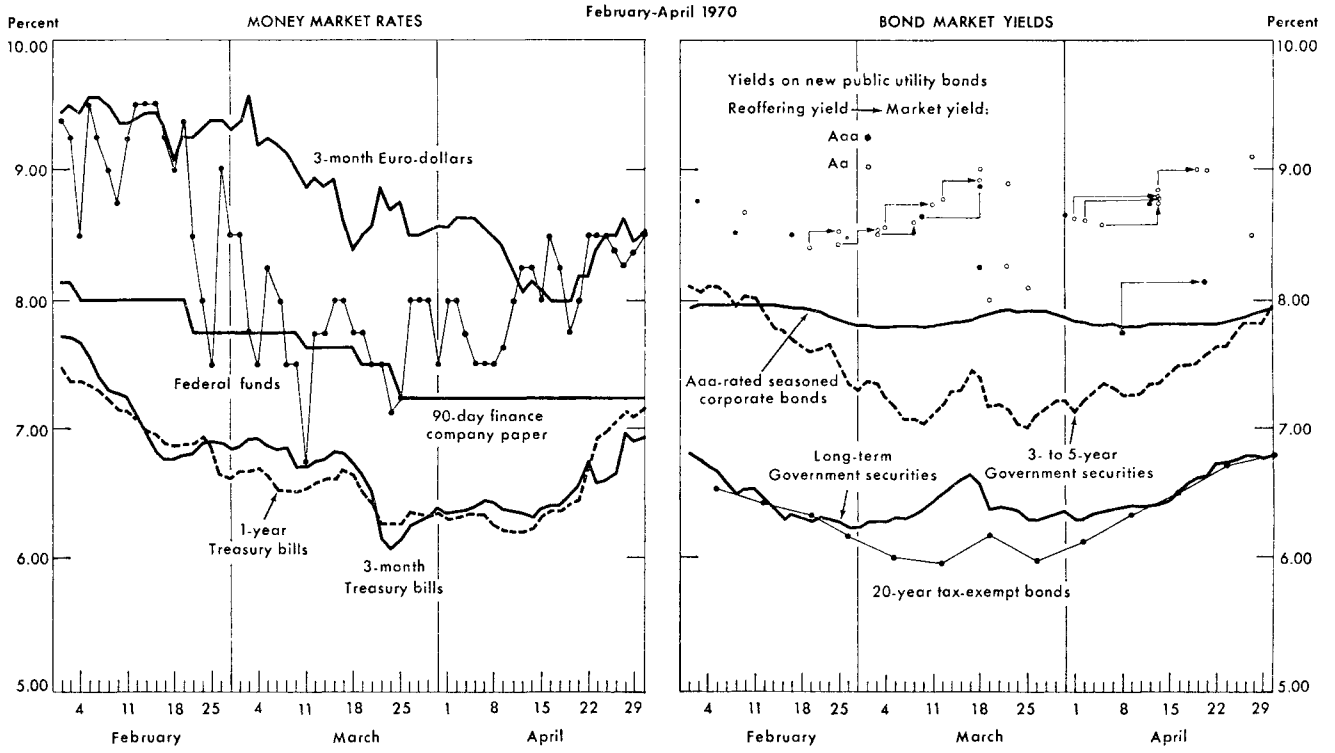
funding, and thereby exerted further downward pressure on the market. This was felt particularly in the intermediate-term area, where dealers attempted to reduce their holdings in anticipation of a new supply from the refunding in this maturity range.

As the month progressed and additional information on the state of the economy became available, many market participants became apprehensive that the economy might begin to expand without the needed check on inflation and that some tightening of monetary policy might be required. In this atmosphere, rates on all coupon issues rose, with the sharpest increases occurring on intermediate- and long-term notes and bonds. As the April 29 announcement of the Treasury's refunding terms drew closer, the tone of the market became increasingly cautious in light of the pronounced deterioration which the market had undergone in recent weeks. The terms of the May refunding were as follows: holders of the $16.6 billion of 5⅝ percent and 6⅜ percent notes maturing May 15, 1970 were offered the right to exchange them for additional amounts of two outstanding issues. These were the 7¾ percent note due May 15, 1973, priced to yield 7.98 percent, and the 8 percent note of February 15, 1977, priced at par. The public held about $4.9 billion of the notes eligible for exchange. Subscription books for the exchange were open from May 4 through May 6. In addition, the Treasury offered for cash or exchange $3.5 billion of a 7¾ percent eighteen-month note in order to meet the attrition on the

Chart II

SELECTED INTEREST RATES

February-April 1970



Note: Data are shown for business days only.

MONEY MARKET RATES QUOTED: Bid rates for three-month Euro-dollars in London; offering rates for directly placed finance company paper; the effective rate on Federal funds (the rate most representative of the transactions executed); closing bid rates (quoted in terms of rate of discount) on newest outstanding three-month and one-year Treasury bills.

BOND MARKET YIELDS QUOTED: Yields on new Aaa- and Aa-rated public utility bonds (arrows point from underwriting syndicate reoffering yield on a given issue to market yield on the same issue immediately after it has been released from syndicate restrictions); daily averages of yields on seasoned Aaa-rated corporate bonds; daily averages of yields on long-term Government securities (bonds due or callable in ten years or more) and on Government securities due in three to five years, computed on the basis of closing bid prices; Thursday averages of yields on twenty seasoned twenty-year tax-exempt bonds (carrying Moody's ratings of Aaa, Aa, A, and Baa).

Sources: Federal Reserve Bank of New York, Board of Governors of the Federal Reserve System, Moody's Investors Service, and The Weekly Bond Buyer.

Table I

FACTORS TENDING TO INCREASE OR DECREASE MEMBER BANK RESERVES, APRIL 1970

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

Factors	Changes in daily averages—week ended on					Net changes
	April 1	April 8	April 15	April 22	April 29	
"Market" factors						
Member bank required reserves	— 91	— 72	— 625	— 57	+ 195	— 650
Operating transactions (subtotal)	+ 118	+ 596	— 457	+ 295	— 424	+ 128
Federal Reserve float	+ 221	+ 581	— 584	+ 671	— 426	+ 463
Treasury operations*	— 51	+ 128	+ 218	— 194	— 211	— 110
Gold and foreign account	— 51	+ 24	+ 78	— 7	— 15	+ 29
Currency outside banks	+ 92	— 11	— 231	— 306	+ 295	— 161
Other Federal Reserve liabilities and capital	— 93	— 128	+ 62	+ 132	— 68	— 95
Total "market" factors	+ 27	+ 524	—1,082	+ 238	— 229	— 522
Direct Federal Reserve credit transactions						
Open market operations (subtotal)	+ 166	— 267	+ 426	— 174	+ 58	+ 209
Outright holdings:						
Government securities	— 111	— 40	+ 156	+ 2	— 72	— 65
Bankers' acceptances	— 1	+ 5	+ 1	— 2	+ 3	+ 6
Repurchase agreements:						
Government securities	+ 225	— 182	+ 214	— 134	+ 108	+ 231
Bankers' acceptances	+ 19	— 13	+ 31	— 26	+ 13	+ 24
Federal agency obligations	+ 34	— 37	+ 24	— 14	+ 6	+ 13
Member bank borrowings	+ 14	— 454	+ 524	— 49	— 78	— 43
Other Federal Reserve assets†	+ 36	+ 28	+ 36	+ 49	+ 79	+ 228
Total	+ 216	— 693	+ 986	— 174	+ 59	+ 394
Excess reserves	+ 243	— 169	— 96	+ 64	— 170	— 128

	Daily average levels					Monthly averages
Member bank:						
Total reserves, including vault cash	27,806	27,709	28,238	28,359	27,994	28,021‡
Required reserves	27,467	27,539	28,164	28,221	28,026	27,883‡
Excess reserves	339	170	74	138	— 32	138‡
Borrowings	949	496	1,020	971	893	866‡
Free, or net borrowed (—), reserves	— 610	— 326	— 946	— 833	— 925	— 728‡
Nonborrowed reserves	26,857	27,213	27,218	27,388	27,101	27,155‡
Net carry-over, excess or deficit (—)§	84	192	119	74	81	110‡

	Changes in Wednesday levels					Net changes
System Account holdings of Government securities maturing in:						
Less than one year	+ 414	— 471	+ 816	— 302	+ 7	+ 464
More than one year	—	—	—	—	—	—
Total	+ 414	— 471	+ 816	— 302	+ 7	+ 464

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

* Includes changes in Treasury currency and cash.

† Includes assets denominated in foreign currencies.

‡ Average for five weeks ended on April 29.

§ Not reflected in data above.

Table II

RESERVE POSITIONS OF MAJOR RESERVE CITY BANKS APRIL 1970

In millions of dollars

Factors affecting basic reserve positions	Daily averages—week ended on					Averages of five weeks ended on April 29
	April 1	April 8	April 15	April 22	April 29	
Eight banks in New York City						
Reserve excess or deficiency (—)*	72	96	— 53	29	— 24	24
Less borrowings from Reserve Banks	232	—	322	517	63	227
Less net interbank Federal Funds purchases or sales (—)	1,302	1,640	2,042	2,479	1,358	1,764
Gross purchases	2,202	2,520	2,749	3,073	2,321	2,573
Gross sales	899	880	707	594	963	809
Equals net basic reserve surplus or deficit (—)	—1,463	—1,545	—2,417	—2,966	—1,445	—1,967
Net loans to Government securities dealers	1,031	915	829	875	517	833
Net carry-over, excess or deficit (—)†	25	38	56	— 9	30	28
Thirty-eight banks outside New York City						
Reserve excess or deficiency (—)*	57	— 51	19	— 35	— 17	— 5
Less borrowings from Reserve Banks	264	269	510	252	362	331
Less net interbank Federal Funds purchases or sales (—)	3,023	4,222	4,575	4,704	3,481	4,001
Gross purchases	4,922	5,778	6,077	6,147	5,493	5,683
Gross sales	1,898	1,558	1,502	1,443	2,012	1,683
Equals net basic reserve surplus or deficit (—)	—3,230	—4,541	—5,066	—4,991	—3,859	—4,337
Net loans to Government securities dealers	683	1,117	853	933	427	813
Net carry-over, excess or deficit (—)†	5	54	— 6	17	3	15

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

* Reserves held after all adjustments applicable to the reporting period less required reserves.

† Not reflected in data above.

Table III

AVERAGE ISSUING RATES* AT REGULAR TREASURY BILL AUCTIONS

In percent

Maturities	Weekly auction dates—April 1970			
	April 6	April 13	April 20	April 27
Three-month	6.409	6.310	6.476	6.876
Six-month	6.454	6.247	6.494	7.253
	Monthly auction dates—February-April 1970			
	February 24	March 24	April 23	
Nine-month	6.994	6.100	6.844	
One-year	6.933	6.132	6.814	

* Interest rates on bills are quoted in terms of a 360-day year, with the discounts from par as the return on the face amount of the bills payable at maturity. Bond yield equivalents, related to the amount actually invested, would be slightly higher.

refunded issues and to raise additional funds. Subscription books were open on May 5 for this part of the offering. Although market participants were somewhat surprised by the inclusion of a cash offering, prices on the "when-issued" securities held at a premium during their first day of trading.

Rates on Treasury bills moved somewhat higher during the early days of the month, partly as a result of investor selling following the establishment of positions for quarterly statement purposes. When the volume of such selling proved less than had been feared and some investment demand emerged, rates turned down for about a week. Dealers carried unusually heavy inventories during much of the month but exerted little selling pressure during the first half of the period despite relatively high financing costs. Substantial demand was expected from state and local government investing of tax receipts and from the reinvestment of funds by holders of outstanding tax anticipation bills (TAB's) maturing on April 22.

After midmonth, dealers became somewhat concerned when the demand from state and local governments failed to materialize to the extent that had been expected, and some paring of positions began. Nonetheless, the resulting pressure on bill rates was not too great, since reinvestment demand from the TAB's was still anticipated. The costs of financing these inventories was increasing, however, and when holders of the maturing TAB's also did not purchase bills in the volume expected, rates rose sharply as dealers marked down prices in an attempt to reduce their stocks. Over the three-day period from April 22 to April 24, rates on some outstanding issues increased by as much as 50 basis points. The rise in yields continued during the remainder of the month but at a more moderate pace. On balance for April as a whole, rates on bills due within three months were mostly 30 to 55 basis points higher while longer term bills generally increased by from 63 to 81 basis points.

Reflecting the increased concern over costly inventories in the face of disappointing demand, the average issuing rates on three- and six-month bills jumped by some 57 and 101 basis points, respectively, between the auctions held on April 13 and April 27. In the monthly auction held on the day following the TAB's maturation, rates on the new nine- and twelve-month bills were set at 6.844 and 6.814 percent, up 74 and 68 basis points from the month earlier (see Table III).

Some $1.7 billion of securities was marketed by five Federally sponsored agencies in April, and initial receptions to several of the offerings appeared good. However, a number of the issues later traded below par as a result of the overall worsening in the capital markets.

OTHER SECURITIES MARKETS

The highlight of the corporate bond market during April was the huge AT&T debenture-warrants offering to those owning its shares as of April 10. Until May 18 of this year, holders of thirty-five rights can purchase for $100 a thirty-year Aaa-rated debenture paying 8¾ percent—10 basis points more than the previous Bell System offering on March 31—and receive warrants to purchase two additional shares of stock at $52 each between November 15, 1970 and May 15, 1975. The company plans to raise almost $1.6 billion through its sale of debentures and an additional $1.6 billion over the 4½ years in which the warrants are exercisable. Initial market reaction to the terms was quite favorable: the when-issued debentures traded at a premium, and the prices established on the when-issued rights and warrants also indicated a good deal of investor interest. Four lower rated utility syndicates were disbanded on the day after the AT&T offering, and sizable upward rate adjustments resulted when the bonds were traded without price restrictions. Appreciative of the higher rate levels that were developing, underwriters marketed a new Aa-rated utility issue on that same day to yield investors 27 basis points more than a similar security in the preceding week.

Corporate bond prices drifted somewhat lower over the remainder of the week of the AT&T announcement and then dropped sharply at the start of the following week, prompting underwriters to raise the return on a new A-rated utility issue to 9.20 percent. Despite the fact that this was only 20 basis points below the record for a comparable issue set last December, early sales were disappointing; however, the unsold balance was reduced in the wake of the successful marketing of two more attractive offerings that followed. Under the weight of a record four months' supply, additional announcements of forthcoming new offerings, and concern about indications of an economic upturn, prices continued their decline as the month progressed, with the AT&T debentures beginning to trade at a discount.

On balance the tax-exempt bond market deteriorated during April, though the reception given some particular new issues was quite good. Reflecting the fairly steady overall decline, *The Weekly Bond Buyer's* index rose each week by from 6 to 23 basis points and reached a high of 6.79 percent on April 30, only 11 basis points below its peak of 6.90 percent set on December 18. Starting the month with substantial inventories from the preceding period (the Blue List of advertised dealer inventories stood at $557 million on March 31), the market was confronted with a record thirty-day calendar which had materialized

as a result of generally rising prices since the start of the year.

Although prices declined on most tax-exempt issues during the month, investor interest was for the most part restrained and dealer inventories remained large throughout the period. At the close of April the Blue List totaled $521 million, a decline of only $36 million over the month. Adding to the poorer tone in the municipal market was an element of uncertainty which arose at midmonth concerning the tax status of borrowing costs incurred by commercial banks, which might be associated with the purchase of tax-exempt securities.

Despite the generally depressed tenor of the tax-exempt market, two of the month's largest issues met with favorable investor receptions. These were a $165 million issue of New York City bonds, which are attractive to local residents because they are also exempt from state and city taxes, and a $100 million issue of Aa-rated Pennsylvania bonds which were priced to yield as much as 7 percent on a 28-year maturity.

Banking and Monetary Developments in the First Quarter

The Federal Open Market Committee, at its meeting of January 15, 1970, concluded that "in the conduct of open market operations increased stress should be placed on the objective of achieving modest growth in the monetary aggregates, with about equal weight being given to bank credit and the money stock. It was agreed that operations should be directed at maintaining firm conditions in the money market, but that they should be modified if it appeared that the objective with respect to the aggregates was not being achieved".[1] In fact, the growth of the money supply accelerated somewhat in the first quarter from the rates of expansion recorded in the final quarter of 1969. Bank credit increased slowly in the first quarter, but credit growth tended to accelerate as the quarter progressed. In the case of the money supply, growth rates within the quarter fluctuated widely, owing in part to technical factors. Time deposit flows also strengthened in this period as the higher Regulation Q interest rate ceilings, made effective by the Board of Governors of the Federal Reserve System on January 21, and the lower money market rates in February and March enhanced the banks' ability to attract these funds. As a result of their more favorable deposit position, commercial banks began to reduce their dependence on nondeposit sources of funds. Bank credit expansion was characterized by a shift in the composition of newly acquired earning assets. The pace of lending slowed, and banks reversed the liquidation of securities holdings that occurred over most of 1969 and early 1970. Interest rates, spurred by widespread expectations of a more relaxed monetary environment and signs of a slowdown in business activity, were marked by a broad-based decline. Rates leveled off, however, at the end of the quarter and rose sharply again in April.[2]

MONEY SUPPLY AND TIME DEPOSITS

The growth of the narrowly defined money supply—privately held demand deposits plus currency held by the nonbank public—quickened during the first quarter. The seasonally adjusted daily average money supply grew at a 3.8 percent annual rate from December through March, up from the 1.2 percent rise in the fourth quarter of 1969. The stronger growth of the money supply in the first

[1] "Record of Policy Actions of the Federal Open Market Committee", *Federal Reserve Bulletin* (April 1970), pages 338-39.

[2] See this *Review*, pages 98-103 for money and bond market developments in April.

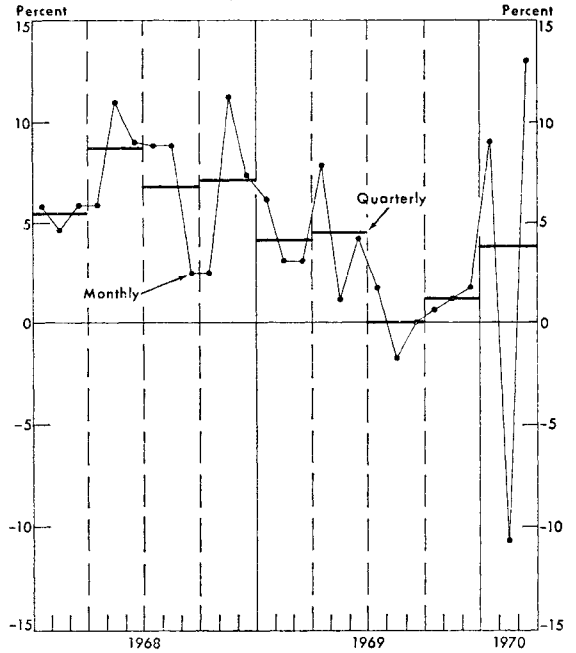
quarter reflected primarily more rapid increases in demand deposits, though the currency component also rose faster than in earlier quarters. Within the first quarter, however, there were very wide month-to-month swings in the rate of growth of the money supply. It grew at a rapid 9.0 percent annual rate in January, dropped sharply by 10.7 percent in February, and rose by 13.2 percent in March (see Chart I), the largest monthly advance since the series began in 1947. Such erratic fluctuations in the narrow money supply suggest some of the difficulties monetary authorities may encounter in attempting to control monetary aggregates in the short run. Erratic short-run swings in the monetary aggregates may largely reflect measurement problems. Seasonal factors, for example, are used to adjust monetary data, but the factors may not adjust for newly emergent seasonal patterns.

One of the major sources of fluctuations in the money supply is associated with the processing and clearing of checks that transfer funds between individuals and economic units throughout the economy. Check-clearing procedures require the physical processing and transportation of a large and rapidly growing volume of checks, and introduce an element of double counting in demand deposits held at commercial banks. When recipients deposit checks at their banks, the depositors' accounts are credited immediately, but usually some time must elapse before the accounts of the issuers can be reduced. This duplication of demand deposits is called "float", and is estimated by cash items in the process of collection plus Federal Reserve float.[3] Since estimated float is subtracted from demand deposits held by the nonbank public in computing the money supply, distortions in the estimate affect the measure of the money supply. At any point in time, there may be a difference between the estimate of float and the true duplication of demand deposits. Part of this difference is attributed to variations in bank accounting practices. Some banks in forwarding checks for collection classify them as "due from banks" rather than as cash items in the process of collection. The double counting of deposits included in due from bank balances cannot be ascertained; thus, there is no way of adjusting the deposit data for this difficulty. Another part of the difference is that some cash items in the process of collection represent debits to deposit accounts not in the money supply. Also, cash items in the process of collection are typically reduced on the basis of an automatic time schedule used by the payee bank; scheduled dates may not correspond to the actual dates on which check issuers' accounts are debited. Estimated float therefore can be subject to wide fluctuations whenever check-clearing processes are interrupted—for example, as a result of bank holidays or disruptions in mail or transportation due to labor strikes or bad weather.

Chart I

GROWTH OF THE NARROW MONEY SUPPLY

Seasonally adjusted annual rates*



*The growth rates are computed in all cases from monthly averages of daily money supply figures. The quarterly growth rates are from the last month of the preceding quarter to the last month of the quarter indicated.

Source: Board of Governors of the Federal Reserve System.

The monthly fluctuations in the money supply within the first quarter of 1970 were related partly to the interruption of transactions in the Euro-dollar market, when European banks closed for holidays on December 26 and again for the Good Friday-Easter Monday weekend (March 27-30) while New York City banks remained open. Typically, there is a large volume of Euro-dollar payments outstanding each day. During European bank holidays, check-clearing procedures continue at American banks and such payments are cleared, but no new transfers arise from European banks. As a result, cash items in the process of collection at American banks fall, without a comparable decline in deposits held by the nonbank public,

[3] For further information about "bank" float and Federal Reserve float, as well as check-processing problems and proposed remedies, see John J. Clarke, "The Payments System: Problems, Fantasies, and Realities", this *Review*, pages 109-15.

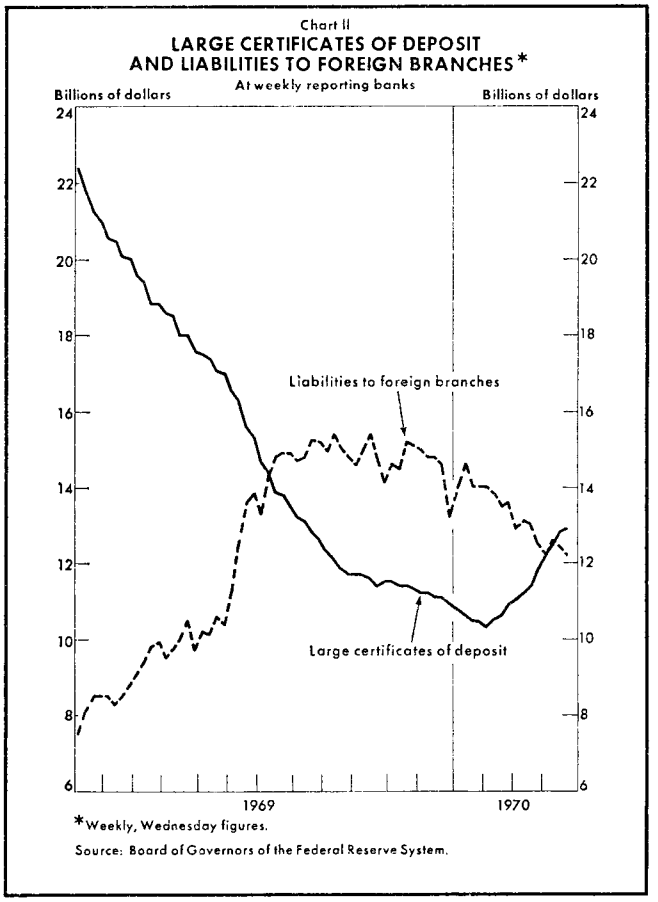
and the measured money supply rises. The mail strike and the air controller "sick out" were additional disturbances that interrupted the check-clearing process and no doubt increased the discrepancy between the accounting adjustment for float and the true value of float; these disturbances may have been contributing factors to the rapid growth of the money supply on a seasonally adjusted basis.

The more rapid money supply growth during the first quarter was accompanied by increased time deposit flows as well. Commercial banks experienced strong time deposit gains late in the period, signaling a noteworthy reversal of the losses that prevailed throughout 1969 and early 1970. In the first quarter, seasonally adjusted total time and savings deposits rose at a 0.4 percent annual rate in contrast to the 6.7 percent decline in the last half of 1969. This improvement in deposit flows reflected the renewed ability of commercial banks to attract funds, as higher Regulation Q interest ceilings became effective on January 21 and as yields on alternative market instruments fell in February and March. Thus, the outflow, which had continued into January, reversed as the quarter progressed, and in March time deposits rose sharply at an annual rate of 14.4 percent.

The first-quarter gain in time deposits was primarily attributable to sizable inflows of large certificates of deposit (CD's), which commenced during February (see Chart II). For the first time in over a year commercial banks experienced a steady increase in such deposits, and this development gained momentum as market interest rates declined. During 1969, the level of large CD's at weekly reporting banks dropped precipitously from $22.4 billion in the first week of January and continued to decline moderately through the fourth quarter. Although banks had increased the volume of CD's issued to official foreign institutions at rates exempt from Regulation Q ceilings in the closing months of 1969, declines in total CD holdings persisted into 1970 and a low of $10.3 billion was reached in the first week of February. Bank sales of CD's to a broad spectrum of investors began to resume, as yields on Treasury securities fell below rate ceilings on CD's of comparable maturities in February and the yield advantage of CD's widened during most of March. The volume of large CD's outstanding at weekly reporting banks rose by $1,522 million, seasonally unadjusted, between the first week of February and the end of the quarter. The March gain of $448 million in holdings of individuals, partnerships, and corporations was the first monthly increase in this category since November 1968. State and local governments also purchased sizable quantities of CD's during the same period.

The first-quarter reversal in deposit flows is also apparent in the behavior of time and savings deposits other than large CD's and reflects the sensitivity of small savers to yield differentials between bank deposits and alternative investments, such as Treasury bills. Weekly reporting banks sustained a heavy $1.3 billion drop in other time and savings deposits in January, following the interest-crediting period. Noncompetitive tenders on Treasury bills —usually submitted by small investors—accounted for more than one third of the new bills awarded in the first three weekly auctions in January. The increase in Regulation Q ceilings later in January tended to curb this disintermediation, as did the Treasury decision—effective with the auction on March 2—to issue new bills in minimum denominations of $10,000. Weekly reporting banks experienced modest inflows of other time and savings deposits in February and substantial gains in March.

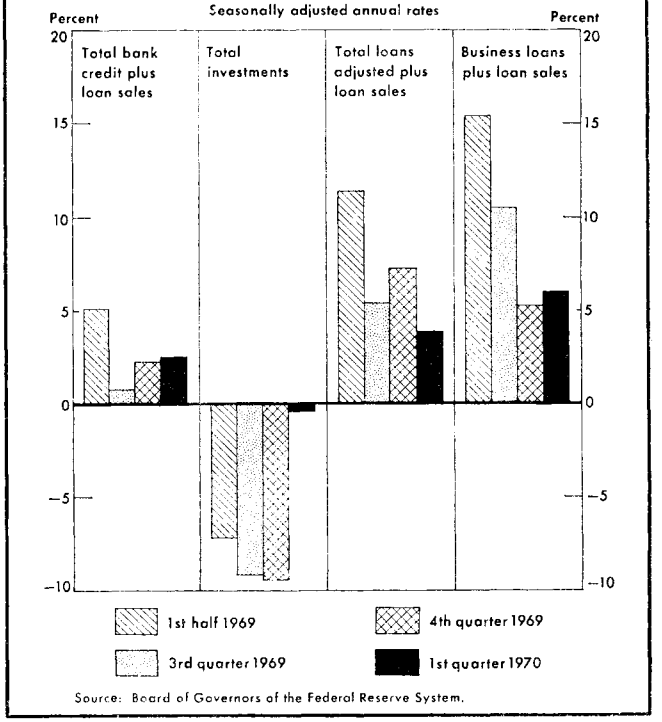
Commercial banks thus became less dependent on nondeposit sources of funds as the quarter progressed. Commercial bank liabilities to their own foreign branches



fell $1.5 billion from the first week of January to a level of $12.5 billion at the end of March (see Chart II). The drop in three-month Euro-dollar interest rates from 10.4 percent early in January to 8.7 percent at the end of March probably reflected in part the slackening demand of United States banks for these funds. Although bank-related sales of commercial paper rose by $2.2 billion to $6.4 billion at the end of the first quarter, most of this increase occurred in January, before the resurgence in deposit flows began. Much of the January increase is a seasonal reversal of the significant moderation that took place in December sales of commercial paper by bank affiliates. Furthermore, although the Board of Governors on February 24 deferred action on its proposal to apply interest rate ceilings and/or reserve requirements on funds obtained by banks through such issues, the growth of bank-related commercial paper in March was by far the smallest of the quarter.

Chart III

CHANGES IN BANK CREDIT AND ITS COMPONENTS AT ALL COMMERCIAL BANKS



Source: Board of Governors of the Federal Reserve System.

BANK CREDIT

There are a number of bank credit measures; two reviewed here, the "adjusted bank credit proxy"[4] and "all commercial bank credit",[5] have been found to be particularly useful. These two measures of bank credit, however, are constructed on different statistical bases. The adjusted proxy is based on average daily deposit and nondeposit liabilities of member banks and provides a quickly available approximation of changes in total bank credit. All commercial bank credit is available only as of the last Wednesday of each month. The adjusted bank credit proxy expanded at a 0.7 percent seasonally adjusted annual rate in the first quarter, down somewhat from the 1.9 percent recorded in the last quarter of 1969. All commercial bank credit, however, rose at a 2.5 percent seasonally adjusted annual rate, compared with the 2.3 percent rise in the prior quarter; some quickening in the first quarter was indicated by a 5.1 percent rise in February and a 4.2 percent gain in March. The commercial bank credit data also provide information about the composition of bank credit.

First-quarter changes in the composition of bank credit were striking by comparison with earlier quarters (see Chart III). The persistent liquidation of investment holdings over 1969, a common phenomenon in periods of severe monetary restraint, moderated during the first quarter and, by the end of the period, banks were adding to their securities portfolios at a rapid rate. This reflects

[4] The adjusted bank credit proxy consists of member bank deposits subject to reserve requirements plus liabilities to foreign branches and, beginning in September 1969, other nondeposit liabilities including Euro-dollars borrowed directly from foreign banks or through brokers and dealers, bank liabilities to own branches in United States territories and possessions, commercial paper issued by bank holding companies or other bank affiliates, and loans or participation in pools of loans sold under repurchase agreement to institutions other than banks and other than banks' own affiliates or subsidiaries.

[5] All commercial bank credit is estimated from selected asset data taken from the consolidated statement of condition supplied by commercial banks in the United States. Major sources for this series are the Wednesday statements of condition for weekly reporting large commercial banks and a less-detailed weekly statement for smaller member banks. The assets of nonreporting nonmember banks are estimated in calculating the series. Loans sold by banks to their affiliates are included in the figures for all commercial bank credit given above. Loans sold represent part of the total credit extended by the banking system during the period, even though they do not remain on the banks' balance sheets. During the first quarter, total loans sold rose by $2.8 billion; seasonally adjusted total bank credit, excluding loan sales, actually fell by $0.3 billion. Of the $2.8 billion in loans sold, $1.9 billion occurred in January and was associated with the reversal in early January of tax-related portfolio adjustments made at the end of 1969. After the heavy volume in January, loan sales moderated considerably in February and March, reflecting in part the improved deposit flows into banks and the decline in the pace of business lending in March.

large March purchases of short- and long-term issues, related in part to the growing portfolios of banks which function as dealers in Treasury and other securities. First-quarter holdings of securities other than those of the United States Government rose at a 10.8 percent annual rate, following a year in which liquidation proceeded at a 1.1 percent annual rate. The growth in these securities holdings, primarily state and municipal government obligations, accelerated in March, as banks added to their portfolios at a sharp 27.1 percent annual rate. Although the liquidation of United States Government securities moderated during the first quarter, bank holdings of Government debt dropped at an annual rate of 15.4 percent, roughly equal to the rate of decline for all of 1969. In March, however, banks increased their holdings of United States Governments at a 9.7 percent annual rate, the first monthly gain since August. Contributing to this strength were bank purchases of April and September tax anticipation bills (TAB's), payable in the first and last weeks of March. A heavy volume of new issues of corporate and tax-exempt securities, in addition to the Treasury TAB's, tended to inflate dealer inventories in February and March. Bank loans to securities dealers, which tend to vary with dealer inventories, registered considerable strength in the last two months of the quarter and grew at a 12.9 percent annual rate for the quarter as a whole.

Total bank loans less securities loans, but adjusted to include loan sales to affiliates, registered a modest 3.5 percent annual rate in the first quarter of 1970. This growth was down considerably from the 6.6 percent rate recorded over the last two quarters of 1969. Business loans comprise the single largest component of the banks' loan portfolios—roughly 38 percent—and fluctuations in this component explain much of the movement in total bank lending. While business loans (including loan sales) grew in each quarter of 1969, the rate of growth dropped in each successive quarter, reaching a 5.3 percent annual rate in the fourth quarter of 1969. The first quarter's 6.0 percent rate was slightly higher, despite a March decline of 3.3 percent, the first monthly drop since 1966 and the largest since mid-1958. The March decline in business loans may have stemmed from repayments by corporations' raising funds directly in the money and capital markets.

Loans to nonbank financial institutions declined very sharply at a seasonally adjusted annual rate of 30.3 percent in the first quarter. This drop followed a sharp rise during the previous quarter, particularly in December when finance companies sought temporary credit in the banking system. The drop represented in large part the shift by nonbank financial institutions back to borrowing through commercial paper. In March, this loan component declined at a more rapid pace, as commercial paper rates fell below the prime rate toward the end of the month, making it less expensive for nonbank financial institutions to borrow through issuing new paper rather than by obtaining credit in the banking system.

Consumer and real estate loans both increased at modest rates in the first quarter, and bank lending in these categories slowed as the quarter progressed. Consumer loans grew at a 3.3 percent annual rate, less than half that recorded in the prior quarter, while real estate loans showed virtually the same advance, 5.7 percent, for the first quarter as in the preceding three months.

INTEREST RATE DEVELOPMENTS AND MEMBER BANK RESERVE POSITIONS

A reversal in the movement of short-term interest rates was a striking development during the January-March quarter. The downturn in rates was particularly sharp in February but showed signs of moderating toward the end of March. The lower levels were in any case still high by historical experience.

In the last quarter of 1969, three-month Treasury bill rates had climbed to a record high, reaching 8.10 percent in early January and then falling dramatically 184 basis points to 6.26 percent in March. The January-March drop in other short-term rates was also striking. Three-month Euro-dollar rates declined from 10.4 percent to 8.7 percent. The rate on four- to six-month prime commercial paper fell from 9.00 percent to 8.03 percent and was below the 8.5 percent prime bank-lending rate for the first time since November. The prime rate was reduced to 8.00 percent by major money market banks on March 25. Over the January-March quarter, the average weekly yield on United States securities maturing in three to five years fell 118 basis points to 7.08 percent, while yields on long-term Government bonds dropped 67 basis points to 6.33 percent. As the quarter drew to a close, rates on intermediate- and long-term Governments rose somewhat, paralleling a rise in bill rates. During the quarter, the average effective rate on Federal funds remained stable at 8.98 percent in January and February and then dropped to 7.76 percent in March. In a related development, member bank reserve positions were somewhat less strained in the first quarter of 1970, compared with the previous two quarters. The average level of net borrowed reserves (unadjusted for seasonal fluctuations) remained high relative to past experience but was reduced from an average $950 million and $936 million in the third and fourth quarters of 1969, respectively, to $815 million by March.

THRIFT INSTITUTIONS

Deposit growth at thrift institutions in the first quarter was quite weak, continuing the pattern that persisted throughout 1969. By the end of the period, however, thrift institutions experienced substantially improved deposit flows, as did the commercial banks. Combined deposits at savings and loan associations and mutual savings banks seasonally adjusted grew at a 1.9 percent annual rate in the first quarter, up somewhat from the 1.4 percent growth posted in the preceding quarter. Deposit flows were particularly adverse in January, and combined deposits dropped sharply by 5.2 percent, the worst monthly performance recorded since the series began in 1955. This weakness followed the quarterly interest-crediting period, when yields on alternative market instruments were at, or near, record highs. During the remainder of the quarter, deposit growth showed substantial improvement and registered a 7.5 percent annual rate of increase in March alone. This reversal reflected the declining yields on market instruments and the late January increase in ceiling rates paid on deposits at thrift institutions. Moreover, the Treasury's announcement that minimum denominations on newly issued Treasury bills would be $10,000 beginning in March discouraged late-quarter withdrawals.

The rate of growth of mortgage loan portfolios at thrift institutions moderated in the January-March period and fell below that posted in the preceding quarter. In order to sustain the level of mortgage lending, the Federal Home Loan Banks (FHLB) have advanced substantial quantities of credit to savings and loan associations, particularly during the latter half of 1969. Some associations began to repay part of their outstanding borrowings as deposit flows improved during the quarter. As a result, growth in the aggregate level of advances from the FHLB continued, but at a much slower rate than in the last quarter of 1969. In an effort to free additional funds for housing construction, the FHLB Board announced liberalized borrowing terms on March 25. The Board authorized sharp increases in advances to savings and loan associations by raising the ceiling on borrowings from 17.5 percent to 25 percent of each association's withdrawable savings and also froze at 7¾ percent the maximum rate charged on these borrowings.

Subscriptions to the MONTHLY REVIEW are available to the public without charge. Additional copies of any issue may be obtained from the Public Information Department, Federal Reserve Bank of New York, 33 Liberty Street, New York, N.Y. 10045.

The Payments System: Problems, Fantasies, and Realities

By JOHN J. CLARKE
Vice President and Special Legal Adviser
Federal Reserve Bank of New York

The number of checks in the United States has been growing rapidly, and is projected to reach about 23 billion this year.[1] In another ten years truly staggering amounts of paper will require processing by the banking system if present trends continue.

Even with the help of MICR[2] encoding and processing, banks are experiencing difficulties in handling the growing number of checks. These difficulties are compounded by a noticeable scarcity of qualified bank personnel, and one effect is to accentuate the obstacles that the ever-expanding volumes of resultant credit extension, or "float", put in the way of a smoothly functioning monetary system. It seems obvious that these difficulties promise to mount as check volume continues to increase.

This article reviews the problems and current efforts directed to solving them.

THE PROBLEMS

The basic problems arise because, under present laws and practices, the check, once it is deposited in a bank, must be handled by people and processed by machines and must be presented to the payor bank—the drawee—for payment. Check operations are complex, in large part because check volume is so high and the average check is subject to multiple handling. The number of checks dwarfs that for other methods of funds transfer, although the dollar value of checks is only about half the total for all money transfers, according to the 1967 study by the Bank Administration Institute (BAI) (see chart). The same study found that the average check is handled in 2.6 banks and sometimes more than once in a single bank. About 70 percent of all checks drawn in the year of the study were "transit items", that is, were sent for collection through the banking system. Transit items are sent to the drawee either directly or indirectly through clearing houses, correspondent and other banks, Federal Reserve Banks, or some combination thereof. The study found that Federal Reserve Banks play an especially important role in the check-collection process, as they received over half the transit items in 1967. The larger the size of the sending bank (if a Federal Reserve member), the greater is the reported likelihood that it would send its transit items (other than local clearing items) to the Federal Reserve Banks.[3]

---

[1] Estimates of check volume come from several sources, forming a cluster substantiating the figure given above.

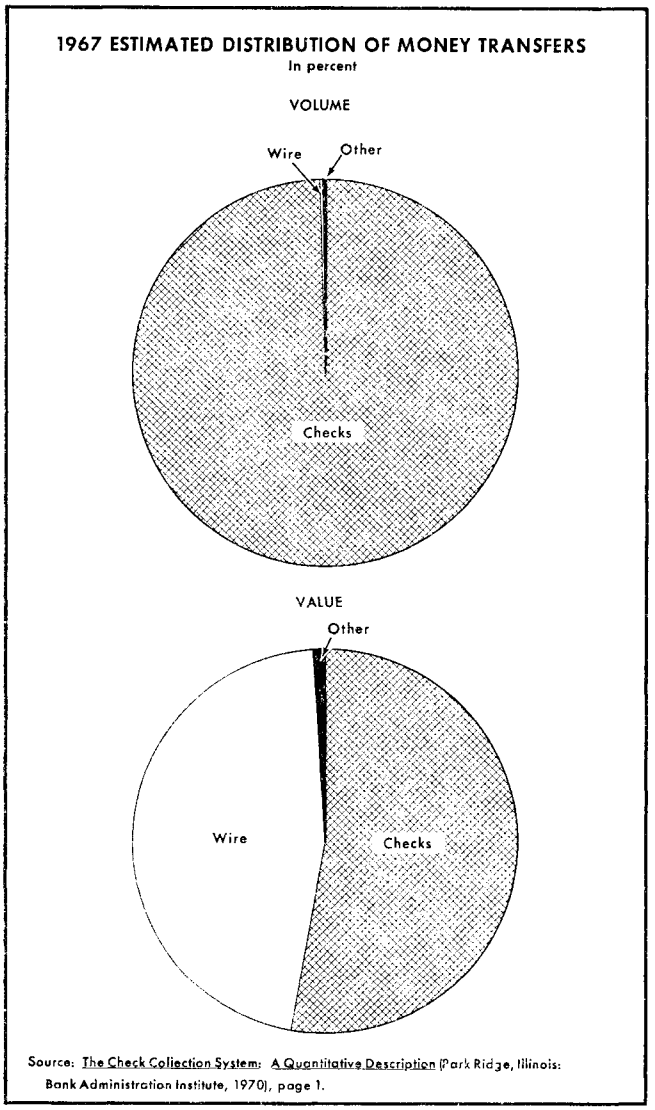
The Bank Administration Institute estimates, on the basis of a 1967 survey, *An Electronic Network for Interbank Payment Communications* (Park Ridge, Illinois, 1969), that the annual volume in that year was 18.7 billion checks; and in another more recent study, *The Check Collection System: A Quantitative Description* (Park Ridge, Illinois, 1970), it assumed an annual growth rate of 7 percent to 8 percent.

In early 1969, the Chairman of The American Bankers Association's Automation Committee, in an unpublished memorandum to the Association's Monetary and Payments System Committee, forecast check volumes of 21.75 billion for 1969, 23.49 billion for 1970, and 34.50 billion for 1975, based upon average yearly increases of 8.6 percent.

In "Changing Manpower Requirements in Banking", *Monthly Labor Review* (September 1962), page 989, Rose Wiener asserted: "Checks cleared through Federal Reserve Banks account for only a little more than one-fourth the total, but their rate of increase seems indicative of the overall trend." The number of checks on commercial banks handled by the Reserve Banks rose from 4.6 billion in 1965 to 6.5 billion in 1969, an average yearly increase of 8.5 percent.

[2] MICR is an acronym for Magnetic Ink Character Recognition.

[3] The study found that the larger banks ($1 billion and over in deposits) sent 86 percent of transit items to Federal Reserve Banks for clearance, while the smaller banks (up to $10 million in deposits) sent only 5 percent. Other factors also influence the proportion of checks sent to the Federal Reserve Banks. The enactment of par clearance statutes, such as the Minnesota 1968 legislation, could increase the proportion by making more checks eligible for Federal Reserve Bank handling.



Source: The Check Collection System: A Quantitative Description (Park Ridge, Illinois: Bank Administration Institute, 1970), page 1.

One of the most acute problems related to the processing and physical handling of checks is that of finding and keeping qualified and efficient personnel. This was one of the conclusions of the 1969 Automation Survey conducted by The American Bankers Association (ABA), and it is a matter of frequent comment by knowledgeable bankers. It is probable that this problem does not exist with the same severity in all parts of the country, but indications are that it is pervasive, in business generally as well as in banking. Whatever may be the long-range prospect, it would appear likely that, for the short run, the most optimistic view is that the situation will get worse before it begins to get better. Hence it seems that personnel shortages in banks, particularly as they affect check handling, will have a more and more serious adverse impact upon the efficiency of the collection process in the years just ahead. A pessimistic view of the future would, on the other hand, raise the specter of a banking system whose channels of payment would be so clogged with paper that a progressive degeneration would set in and ultimately require the abandonment of that system in favor of some jerry-built system of the future.

Increasing use of high-speed data processing machines has helped to improve the productivity of employees engaged in handling checks and has enabled banks to cope with the growing volume of this paper. A check carries information identifying the payee, the payor—or drawee—bank, and the drawer; and, in effect, it tells the payor bank to pay a stated amount to the payee, or order, for account of the drawer. Encoded on standardized checks, in magnetic ink characters that are machine readable, is information identifying the drawer and the drawee bank and stating the amount; this information qualifies the check to pass through automatic sorting machinery that, with the aid of human hands, combined with the appropriate form or forms of transportation, will enable a particular check finally to "come home" to its destination—the drawer's account in one of the thirty-odd thousand banking offices in the country—and to be charged to that account if it is "good", and returned if it is not. Despite the use of machine techniques, time is required for manual processing and for the physical transportation of the paper—at what sometimes seems to be a snail's pace—between banks.

One important aspect of our check-collection procedures is the creation of "float". Float is essentially the double counting of the same deposits, and it arises because banks typically credit a depositor's account with the amount of a check before the check issuer's bank account is debited.[4]

Float consists of the so-called "bank" float and Federal Reserve float. A check in the process of collection between two commercial banks always contributes to bank float. Checks presented to a Federal Reserve Bank for collection become part of Federal Reserve float and are removed from bank float if the depositing commercial bank

[4] Timing delays also cause a discrepancy between the records kept by deposit holders and the records of their deposit kept by banks; this is known as "mail" float. See "A New Measure of the Money Supply", *Federal Reserve Bulletin* (October 1960), pages 1102-23.

receives credit in its reserve account with its Reserve Bank (which is effected automatically on the basis of a prescribed time schedule) before the Federal Reserve Bank receives payment or remittance therefor. Thus, a given check may initially be part of bank float and subsequently become a portion of Federal Reserve float.

Both bank float and Federal Reserve float are quite volatile, and have tended to mount with the increase in check volume.[5] Bank float can be measured only imperfectly and distorts the data on monetary aggregates, such as the money supply. Wide swings in Federal Reserve float distort the reserve positions of banks and make the open market operations of the Federal Reserve System more difficult.[6]

Float, however, provides a distinct benefit to banks and depositors. Bank float adds to the cash and "due from" bank balances that are important in measuring banks' liquidity positions. Of course, any increase in these balances adds to the banks' willingness and urge to lend or invest. Even more significant is an increase in Federal Reserve float, which adds to the high-powered reserves of the banking system, provided there are no offsetting open market operations by the Federal Reserve System. In any event, it is apparent that the benefits of Federal Reserve float are distributed disproportionately among banks. Those that are some distance away from a Federal Reserve office appear to be the primary beneficiaries and, in addition, are only remotely affected by any offsetting Federal Reserve open market operations. Depositors are also beneficiaries of float because there are delays before the checks they issue are charged to their accounts, while deposited checks are credited immediately (though the balances are not necessarily available for immediate use). On the whole, this state of affairs tends to give them the use of their funds for longer periods of time. These various benefits have led to some resistance to change, even though the costs of check processing and of slow payments are high.

Despite these obstacles, the desirability of shortening or eliminating payment delays has long been recognized; some thought has been given to ways it might be done; and some action—though perhaps not enough—has been taken.

PROPOSALS FOR IMPROVING THE PAYMENTS SYSTEM

The proposals thus far advanced have been of three general kinds, all designed to bring about the speedier transfer of funds: (1) those which, contemplating the continued use of the check as a written order on paper for the payment of money, would attempt to shorten the time now required to move the information on the paper from place to place, either by routing the checks to the payor banks more efficiently or by substituting electronic messages for paper messages to move the information on the check some part of the way to its destination; (2) those which would register that information on magnetic tape before it entered the banking system, and would pass the information through the banking system on tapes or by means of wire bridges between banks, the accounting being handled as at present, though on the basis of magnetic tape items rather than paper items; and (3) those which envision the gradual development of a nationwide computer-communications network through which instantaneous money transfers could be ordered and made, utilizing depositor-operated terminals remote from the computers on which the depositor's account records were stored.[7] The first class of proposals would hasten check collection; the second and third would tend to eliminate checks as a method of payment.

The proposal—that checks be routed more efficiently so that they can be presented and paid (or returned unpaid) sooner—certainly has its supporters, but a far greater amount of attention is being directed toward the utilization of the technological advantages that the computer and high-speed communications lines are thought to afford. Certainly the use of paper from the beginning to the end of the collection process is, at best, conceived of as a phenomenon which will inevitably taper off (if not

[5] Elimination of float, as might be envisaged by some of the proposals outlined below, could bring revolutionary changes to the theory and management of money. See G. Garvy and M. R. Blyn, *The Velocity of Money* (New York: Federal Reserve Bank of New York, 1969), pages 92-94.

[6] Federal Reserve average daily balance-sheet float, on a weekly basis, for the year 1969 ranged between a low of about $2.0 billion and a high of $3.6 billion.

[7] The mass of published material on the automated aspects of check collection and the other proposals described could not be listed here conveniently and economically. The author has been guilty of contributing to this situation; some of his published articles in this general field, having a legal tinge, are listed below: "Mechanized Check Collection", *The Business Lawyer* (July 1959), pages 989-1007; "Electronic Brains for Banks", *ibid.* (April 1962), pages 532-47; "Check-out Time for Checks", *ibid.* (July 1966), pages 931-45; "An Item is an Item is an Item: Article 4 of the UCC and the Electronic Age", *ibid.* (November 1969), pages 109-19.

disappear) because of the higher speed with which electrons can, under ideal conditions, move from place to place information on which payment is to be based.

While paper continues to be used, various schemes are being proposed for the purpose of speeding up the time of payment, in the hope that they will, if they work, partially compensate for the slow movement of paper, and thus blunt the undesirable effects noted above. But since these proposals appear to depend for success upon the consent of the payor banks to make early payment, and since those banks would, if the schemes were put into effect, be losing funds earlier than they now do, it is difficult to suppose that, without some compensating advantages, banks would generally be willing to make payment before the law required them to. If compensating advantages have been thought of, they have not thus far been put forward publicly.

The proposal to use electronics for moving the information on checks part of the way to its destination (the so-called "truncation" method) does not seem to have taken hold, though publicly proposed at least four years ago.[8] Both operational and legal objections to the proposal have been raised; these seem to have tempered the initial enthusiasm with which it was received. Although a somewhat similar plan is in operation on a pilot basis in Sweden today, the impediments to successful transplants, in business systems as in heart surgery, are too well known to call for more than mention.

USE OF MAGNETIC TAPES TO EFFECT PAYMENTS

Magnetic tapes are now being used by the American banking system for such things as the payment of payrolls; they are also being used by the London clearing banks for interbank debit transfers (functionally analogous to the paper check) as well. The SCOPE[9] project in California (a joint venture of the San Francisco and Los Angeles clearing houses), initiated in April 1968, seems to be pointed in this same direction. The New York Clearing House, too, has a group actively pursuing this matter on the East Coast.[10] Questions of message format (among many others) are very important, for a decision must be made in each of these projects, quite early on, whether compatibility is to be sought on a local level only, or whether it must relate to some national standard of compatibility as yet unformulated. Waiting for a national standard to evolve may well frustrate early completion of such projects; what may ultimately be needed is the exertion of some wise and strong leadership on a national scale to create such a standard and bring it into use.

To the extent that customer-generated magnetic tapes enter the banking system for the purpose of bringing about money transfers, paper is eliminated, the amount of handling by both machines and human beings is reduced, and delays in payment, and thus float, tend to drift toward more tolerable levels. However, undertakings of this sort now on the march are so puny, in relation to the total problem, that some time will elapse, assuming that these efforts are continued and expanded, before they begin to chip away at the amount of credit extension that flows from the operation of the present paper-burdened payments system.

PREAUTHORIZED PAYMENTS

"Preauthorized payments", a term often used in connection with both "credit transfer" and "debit transfer" systems, is a means of assuring that the debtor's bank of deposit will pay his recurring bills, whether level or variable in amount, without recurring action by him.[11] Preauthorized payment plans are not the exclusive prerogative of nonpaper payments systems; in some countries they have been operating successfully on a paper basis for decades. The American psychology is not, it appears, hospitable to such schemes unless the depositor-debtor is offered some economic inducement for prompt payment (such as a discount or the nonaccrual of extra charges) in order to secure his participation. The success

[8] *Hearings,* Subcommittee on Legal and Monetary Affairs, House Committee on Government Operations (February 9, 1966). The specific suggestion made was that it might one day be possible for the Federal Reserve Banks to present all checks received by them on their own premises, and transmit facsimiles to the drawees by electronic means. The paid checks would be retained by the Reserve Banks subject to requests for retrieval made by the drawers. The sending banks would be given immediate credit for the checks and the drawee banks would be immediately charged, subject in each case to reversal if an item were not finally paid.

[9] SCOPE is an acronym for Special Committee on Paperless Entries.

[10] Banks in Seattle, Indianapolis, and perhaps other places are investigating the possibility of SCOPE-like projects.

[11] A "debit transfer" system is one in which an item containing a request or order for the payment of money is received by the banking system from a depositor who is to receive payment if the item is honored by the drawee after receipt; and a "credit transfer" system is one in which the first impact on the banking system is the receipt by the paying bank from its depositor of an order to pay money, to the debit of his account, to credit an identified account in the same or another bank, which is also identified.

of the insurance premium draft plan (under which appreciable economic benefits are reaped by a participating depositor-debtor)[12] and the failure of other preauthorized payment plans to take hold when no such benefits can be realized seem to offer ample verification of this thesis. There are some straws in the wind which suggest that preauthorization plans will receive increasingly active attention in the very near future. If this occurs, it should prove an interesting and helpful development.

ELECTRONIC PAYMENTS

The most ambitious of the proposals thus far made for improving the payments system contemplates the gradual development of a nationwide computer-communications network through which money transfers could be effected, utilizing depositor-operated terminals remote from the computers on which the depositors' account records were stored. Proposals of this sort usually include such features as: (1) a machine-readable identification card[13] with a built-in verification factor of sufficient reliability, (2) a credit rating with overdraft privileges (for depositors with steady income or assured assets), (3) a system of preauthorizing repetitive payments, and (4) an on-line terminal at each place where payments might be originated by a depositor.

Apart from the rather obvious questions of sponsorship, customer acceptance, the possible need for changes in the legal environment, and the effect of such a system upon the structure and functioning of the banking system, there are two aspects of the proposal for a nationwide computer-communications network, which, for the present at least, induce caution in embracing it. They merit comment. The first of these is identification; the second, communications.[14]

IDENTIFICATION. It is apparent that the matter of identifying and legitimating each order to pay out of an account under such a system is of high importance. If a malefactor could readily penetrate the system to order unauthorized payments, there would be little confidence in it, nor use of it. To counter the threat of penetration, various proposals have been put forward for identifying an account holder before a payment can be made from his account. None of these has as yet been proved to be wholly acceptable, if the goal is to exclude the possibility of successful deception, or if the expense of detecting a would-be malefactor is so high, when weighed against the losses his success could cause, as to be economically unjustifiable.

The prerequisites of a successful identification system, for this purpose, include: (1) an identification device that is difficult to counterfeit to the point of being virtually self-authenticating and (2) a technique for establishing, without subjective human intervention, that the user of the device is the person to whom the device pertains. It seems to be accepted that absolute identification is an unattainable goal at present; the best that can be expected now is a very high degree of probability.

While claims have been made that some identification devices are virtually self-authenticating (in the sense that they are almost impossible to counterfeit), the validity of those claims does not seem to have been publicly demonstrated, or tested on a sufficiently wide scale to induce confidence in them.

At one time great hopes were entertained for the voice-spectrogram technique, involving what are commonly called "voice prints" as a means of identification. It seems to have lost much of its former glamour, in the view of some technicians.[15] Another proposed technique is the

[12] In these plans, which generally relate to life insurance policies, the insurance policyholder authorizes his insurance company to initiate at regular intervals—usually monthly—drafts on his bank, chargeable to his checking account, to pay the premiums. The policyholder also authorizes his bank to honor these drafts upon presentment. The policyholder enjoys an economic advantage, as well as a convenience, in these preauthorized payment plans. Insurance companies usually charge a higher premium for monthly rather than yearly payment plans, but in the case of preauthorized monthly payment plans the premium is lower than that in conventional monthly plans.

[13] In some circumstances, the present check system places reliance on identification cards; their experimental use in connection with the cashing of New York City welfare checks is said to have reduced losses markedly. These cards will also be used as an identification medium in connection with the expanded food stamp program in New York City this year. "Welfare Recipients to Get I.D.", *The New York Times* (April 8, 1970), page 30.

[14] This is not to say that a comparison of the costs of the present system with those of the proposed system will inevitably be decided in favor of the proposed system. Enough is known, however, to suggest that more detailed cost studies than have yet been made will tend to favor the new system, if certain assumptions as to minimum traffic volumes are made.

[15] A recent article, "Identification of a Speaker by Speech Spectrograms", appearing in *Science* (October 17, 1969), concludes that "the available results are inadequate to establish the reliability of voice identifications by spectrograms". The authors (Richard H. Bolt, Franklin S. Cooper, Edward E. David, Jr., Peter B. Denes, James M. Pickett, and Kenneth N. Stevens) state: ". . . the experiments reported thus far do not provide a direct test of the practical task of determining whether two spoken passages were uttered by the same speaker, or by two different speakers . . ." and "Reliable machine methods for voice identification have not yet been established".

reduction of fingerprint patterns to a digital base, and yet another is that of "hand geography", under which relatively constant characteristics of the hand—length of the fingers, width of the knuckles, distance between joints, etc.—are reduced to formulae which are registered digitally in a card that can be read by a machine and compared with the characteristics of the hand, proffered as that of the account holder, which is being viewed by the machine. Other more exotic identification systems, such as a "body-odor sniffer", linked to a register of the body-odor characteristics of the account holder contained in the identification device itself or in the memory of a remote computer, have also been spoken of, but their projected cost might well be too high to justify their use to protect only moderate bank balances from depredation.

A "nonphysical" technique is that of the secret number, a number known only to the legitimate device holder and embedded magnetically but invisibly in the device. The user must key-in this number when using the device in order to make it work.[16] Such a technique has been enjoying limited use and may be adequate when the amounts at stake are not very large but, if they were large, its use would no doubt be thought imprudent.[17]

COMMUNICATIONS. The notion that the high-speed communications channels, necessary for the routing of payments instructions from point of origin to point of destination, are obtainable simply by asking for them is, at present, a sheer myth. The channels must be of "voice grade", i.e., capable of carrying telephone conversations. It is a matter of common experience even in an ordinary telephone conversation that such lines do not function without occasional imperfections of service, such as fadings, echoes, distortions, and even unexplained breaks in the transmission. These phenomena do not seriously impair communications in all cases (for the human mind will sometimes supply imperfectly heard, or unheard, parts of conventional speech patterns) but in some they do. However, when it is recalled that in this new payments system humans are not to intervene in communications between computers, it will be appreciated that, because the "artificial intelligence" of the most advanced computer is far from being a match for the human mind, the occurrence of these phenomena will impair effective communication between computers on a much grander scale than is the case with human beings.

Apart from defects in communication, once a proper connection has been made, are those incident to establishing connection, e.g., inordinate waiting for dial tones, busy signals, wrong numbers, erroneous "intercepts", and others of that stripe.[18] These defects affect human users emotionally; while computers through the third generation do not experience emotions, the occurrence of these defects would, if computers were to try to establish connections automatically, delay effective computer-to-computer communication and could also compromise the security of the communications system itself.

However, the outlook is not completely bleak. The communications companies are expending appreciable effort and money to improve their facilities. In addition, during the past year or so, a great number of parties have applied to the Federal Communications Commission (FCC) for authority to operate microwave systems that would lease communications channels to banks and other organizations. For instance, several applications by affiliates of Microwave Communications, Inc., have been made to the FCC for permission to provide special service common carrier microwave systems. Among the routes proposed so far are: (a) Chicago and St. Louis (approved by the FCC, but now in litigation), (b) Chicago and New York, (c) San Diego, California, and Everett, Washington, (d) Chicago, Minneapolis, and St. Paul, and (e) New York and Boston. Other companies, too, have applied for these routes, among others.

Several months ago, in what was described as the largest single filing for new communications facilities in history, the University Computing Company submitted to the FCC a proposal for a $375 million microwave radio system to serve thirty-five major metropolitan centers across the country. The company sees a broad potential market for its services in banking, insurance, manufacturing, petro-chemical, food retailing, securities, and transportation fields. A press statement in connection with the application notes that the system not only would interface with computers and teletype machines, but would also

[16] A prominent bank has experimented with this method.

[17] Stanford Research Institute, "A Techno-economic Study of Methods of Improving the Payments Mechanism", a 1966 study prepared for the Federal Reserve System Subcommittee on Improving the Payments Mechanism, page 78; *AFIPS Spring Joint Computer Conference* (1967), Vol. 30, page 288; *F.C.C. Docket 16979—In the Matter of Regulatory and Policy Problems Presented by the Interdependence of Computer and Communications Services and Facilities, Response of International Business Machines Corporation* (March 1968), pages I-66-67.

[18] "Phone Users Cite Service Decline", *The New York Times* (November 22, 1969), page 1; "Forecasting Telephone Needs at Root of Service Problems", *ibid.* (November 23, 1969), page 32.

provide ready access to and from digital xerographic-type machines, thereby permitting transmission of facsimile and other types of graphic information six or more times faster than today's voice circuits.[19] The Bell System and Western Union have petitioned the FCC to deny this application.

Many organizations, within and without banking, have the payments system under study. A partial list of these is contained in the BAI report on check collection. Most prominent within banking (apart from those mentioned above) are the ABA's Monetary and Payments System (MAPS) Committee, with four task forces—marketing, economics, legal/legislative, operations/technology—and the Federal Reserve's Steering Committee on Improving the Payments Mechanism (SCIPM). Some of the Federal Reserve Banks have also launched investigative efforts of rather wide compass to include inquiry into matters in this field.

The work of these groups, much of it directed to the solution of rather narrow problems, could no doubt be coordinated better than it is, if the environment were ideal; but it is not. For one thing, it is not clear on the basis of the track record up to this point who would be able and willing to do the coordinating; moreover, the pace of the whole effort would surely be determined by the coordinator, if one existed. The efforts toward coordination, so far, have failed flatly, involved too limited a group, or moved too slowly (or too fast) for some of the participants.

Governor George Mitchell, the Chairman of SCIPM, recently concluded a talk[20] by saying:

> The banking industry and the Federal Reserve have the major responsibility for achieving steady progress toward an electronic payments mechanism. I suspect an outsider would judge that neither of us is working at full capacity to do so.

The author, who is not altogether an outsider, would tend to agree. Strong leadership, and wise, will indeed be needed to bring current proposals (or others of equal promise) to flower in good season.

[19] Other significant developments bearing upon the possibilities just discussed include the following: (a) A computer-based credit authorization system—called Omniswitch—for Master Charge and all other charge and credit cards. Formed by First National City Bank and the members of Eastern States Bankcard Association, the system will provide all participating merchants with a single local telephone number to obtain sales authorization for card purchasers. Bank of America and American Express Company have recently announced their plan to establish a similar nationwide credit card authorization service corporation that would be open to all charge-card issuers. (b) The United States Post Office announcement of the awarding of a contract to General Dynamics (Electronics Division) to make a state-of-the-art study to examine all methods of applying electronic technology to the mails, including microwave and laser-beam methods of transmission. Among the many possibilities the study will explore is visual delivery of mail on a home facsimile printing device. (c) The appearance on the market of terminals designed to transmit information regarding a retail sales transaction from the situs of the sale to a computer.

[20] "The Needle in the Paper Stack", an address before the Senior Banking Forum of the American Institute of Banking, Kansas City, Missouri, March 19, 1970, in which Governor Mitchell explored the progress being made toward an electronic payments system. One of the few encouraging signs he noted in his scan is the newly designed Federal Reserve communications system that initially will handle a twelvefold increase in transactions and can be expanded to accommodate perhaps one hundred times the present volume of wire transfer transactions. When the system is in full operation, messages will be switched automatically between Federal Reserve offices, and with this capability it is possible to envisage that the system will some day allow the automatic routing of funds-transfer messages originating at a member bank or clearing center through the Federal Reserve communications system to the appropriate receiving banks. The system is not quite ready to function; the switch has been installed in Culpeper, Virginia, and at present is being readied for testing.