

# Federal Reserve Bank of New York

## Quarterly Review

Autumn 1980 Volume 5 No. 3

- 1 Financial Innovation in Canada
  - Current developments
- 9 The business situation
- 12 The financial markets
- 15 Recent Trends in the Federal Taxation of Individual Income
- 21 Increasing Personal Saving: Can Consumption Taxes Help?
- 28 Treasury and Federal Reserve Foreign Exchange Operations

*The Quarterly Review is published by the Research and Statistics Function of the Federal Reserve Bank of New York. Among the members of the function who contributed to this issue are LAURIE LANDY (on financial innovation in Canada, page 1); CARL J. PALASH (on recent trends in the Federal taxation of individual income, page 15); ROBERT DeFINA (on whether consumption taxes can help increase personal saving, page 21).*

*A semiannual report of Treasury and Federal Reserve foreign exchange operations for the period February through July 1980 begins on page 28.*

# Financial Innovation in Canada

Many of the same factors leading to financial innovation in this country during the 1970s—such as high interest rates and rapid inflation—have also played an important part in Canadian financial innovation. Given the distinctive financial structure of each country, however, the innovations have not taken necessarily the same form. For the United States the result has been the rapid development of highly liquid nondeposit assets both inside and outside the banking system, such as money market mutual funds and repurchase agreements (RPs). In Canada, however, financial innovation has been contained largely within the banking structure. Although the channels through which innovations developed in Canada and the United States have differed, in both countries the result has been that consumers and corporations are managing their transactions balances much more efficiently and are economizing on their holdings of this money.

This consequence of recent financial innovation has created difficulties for the conduct of monetary policy in Canada, just as it has in the United States. Since 1975 the Bank of Canada has placed great importance on controlling, through monetary targeting, the growth of the narrow money stock—M-1—defined as currency plus demand deposits at chartered (commercial) banks.

The author would like to thank several members of the Bank of Canada's Department of Monetary and Financial Analysis and numerous individuals of the Canadian banking community who were extremely helpful in the preparation of this paper. None of these individuals, however, are responsible for errors of fact and interpretation.

Financial innovation can cause problems for a monetary targeting strategy, however, because it is difficult to assess its impact on M-1 and to adjust appropriately the targeted growth rate over time. Consequently, the Bank of Canada has expressed some uneasiness about "the confidence that one can have in the stability of the relationship between M-1, national expenditures, and interest rates" and has cautioned that, given the rapid evolution of the banking system, "one cannot put uncritical reliance on this measure of the money supply as a guide to monetary policy".<sup>1</sup>

The most important Canadian banking innovations affecting corporate and household money holdings during the past few years are described in the following sections. Given this rapidly changing financial picture, the final section examines the impact of these financial innovations on the demand for money.

## Corporate sector

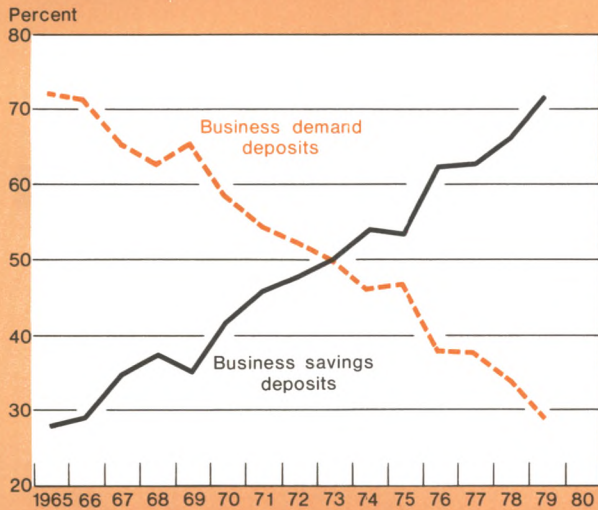
A large part of the explanation for the slower growth of transactions balances relative to economic activity can be found in the changing banking practices of the corporate sector. Since the last comprehensive Bank Act revision in 1967, there has been a significant redistribution in corporate banking assets.<sup>2</sup> The proportion of nonpersonal deposits held as interest-bearing

<sup>1</sup> Bank of Canada *Annual Report* (1979), page 25.

<sup>2</sup> In Canada a comprehensive review of banking legislation is conducted roughly every ten years. The last review took place in 1967, and a new Bank Act has been pending for over three years.

Chart 1

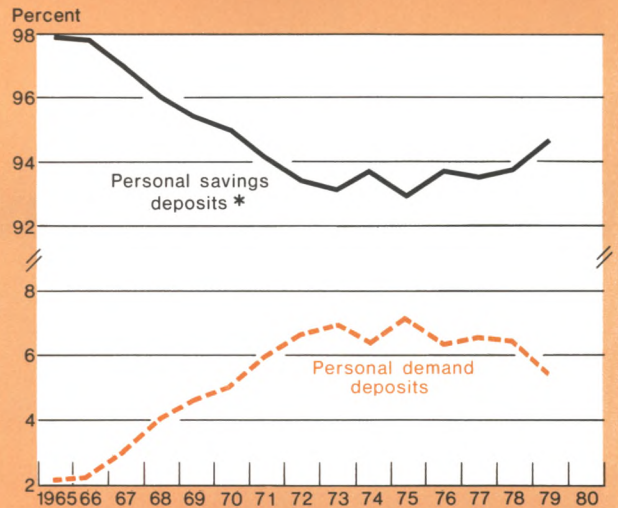
### Distribution of Business Deposits at Canadian Chartered Banks



Source: Bank of Canada Review.

Chart 2

### Distribution of Personal Deposits at Canadian Chartered Banks



\* Both checkable and noncheckable deposits, including daily-interest savings accounts.

Source: Bank of Canada Review.

Chart 3

### Velocity of Canadian Monetary Aggregates

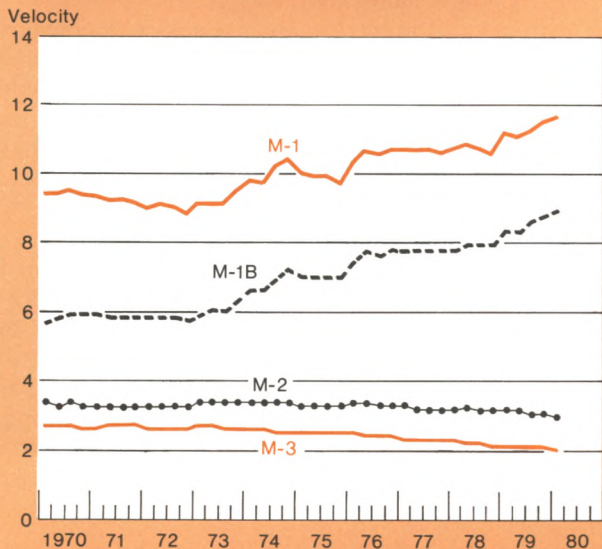
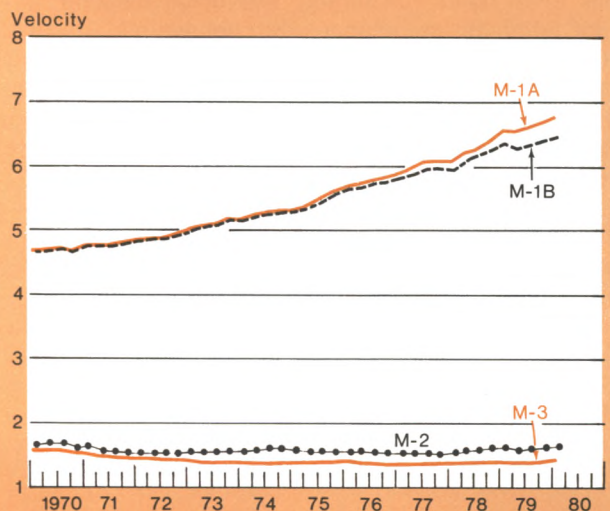


Chart 4

### Velocity of United States Monetary Aggregates





assets increased from about 35 percent in 1967 to more than 70 percent last year, while the proportion held as demand deposits decreased from 65 percent to 29 percent (Chart 1). The reason for this dramatic change in the composition of corporate deposit holdings can be found largely in the 1967 Bank Act revision. Prior to the last Bank Act, Canadian chartered banks did not compete aggressively for corporate deposits. Although no legal interest rate ceiling existed on deposits, the banks were hindered from offering a competitive interest rate by a 6 percent legal ceiling on bank lending. They were also discouraged by a relatively high 8 percent reserve requirement on both demand and savings deposits.

The 1967 Bank Act eliminated the interest rate ceiling on lending and lowered to 4 percent the reserve requirement for savings deposits, while raising the demand deposit requirement to 12 percent. Also, the remaining restrictions on residential mortgage lending by the chartered banks were eased. These legislative changes gave the chartered banks incentive to solicit actively large blocks of short-term corporate funds and to channel new and existing deposits into interest-earning accounts.<sup>3</sup>

During the last five years the increased availability of cash management techniques in Canada has encouraged corporations to economize further on their noninterest-earning deposits. Cash management in the Canadian context takes the form of bank consolidation of dispersed corporate funds into a centralized concentration account each day. Typically, the corporate treasurer receives a report of the company's consolidated balance on the morning after deposits are made. The treasurer then has the option of placing the funds in a bank deposit instrument, of investing in the money market, or of paying down bank loans. Demand accounts can thus be maintained with a zero or near-zero balance.

The impetus for developing these cash concentration accounts first came from the Canadian subsidiaries of United States transnational corporations, whose parents had been pressing for similar services in their home market. During the last half dozen years, concentration accounts in Canada have become widespread in the wake of protracted sharp increases in interest rates.

<sup>3</sup> The legislative environment remained relatively unrestricted during the 1970s with the exception of a period between mid-1972 and early 1975 when the so-called "Winnipeg Agreement" was in effect. During this period the Canadian Finance Minister and the chartered banks agreed that an interest rate ceiling of 5½ percent (which was raised on subsequent occasions) would be applied to chartered bank term deposits, with maturities of less than one year, of Can.\$100,000 or more.

Coincident with the rise in interest rates were important breakthroughs in computer technology. These computer advances made the concentration of dispersed accounts economically feasible for the banks. Also, the oligopolistic structure of Canadian banking, which is comprised of five major banks, each with a nationwide network of branches, is ideally suited for the provision of these services.

Several of the chartered banks have special commercial deposit accounts for their corporate cash management customers with minimum balances of Can.\$100,000 or more. These accounts are designed to provide an interest-bearing instrument for automatic investment of funds from concentration accounts. The interest rate paid on these special savings accounts is related to the prime rate and thirty-day certificate of deposit (CD) rate and is computed on a combination of the minimum and average monthly balance in the account.

In contrast to the United States, Canada does not prohibit the issue of CDs with less than a thirty-day maturity (CDs frequently are contracted for as short as one day).<sup>4</sup> Furthermore, as noted earlier, Canada does not have an interest rate ceiling on such deposits. As a result, interest rates for deposits at banks are fully competitive with money market alternatives. Consequently, Canada has seen little, if any, growth of a market for RPs—a mechanism which in the United States developed largely in response to regulatory constraints.

Over recent years, cash management techniques in Canada have spread to progressively smaller businesses. What is important to the Bank of Canada's future targeting strategy is whether the innovations will continue to draw in smaller accounts over time, or whether they have already worked through the financial system, so that all customers who would benefit from these new arrangements are now included.

#### **Household sector**

The distribution of household banking assets between demand deposit accounts and savings accounts presents a very different picture from the business sector. At the time of the last Bank Act in 1967, only 3 percent of consumer accounts was held in noninterest-bearing checking accounts, so there was not much scope for household economizing on these types of transactions balances. Part of the reason why so small a percentage of total consumer banking funds was held as demand deposits is that Canadian consumers could also place their assets in a bank account which was both check-

<sup>4</sup> The Monetary Control Act of 1980, however, has shortened the minimum maturity for time deposits in the United States from the present thirty days to fourteen days.

## Box I: United States and Canadian Definitions of the Monetary Aggregates

|          | Canada   | United States   |
|----------|--|---|
| M-1 ...  | Currency plus demand deposits at chartered banks.  | M-1A ... Currency plus demand deposits at commercial banks.   |
| M-1B ... | M-1 plus personal and nonpersonal checkable interest-bearing Canadian dollar deposits at chartered banks.  | M-1B ... M-1A plus NOW and ATS accounts* at banks and thrift institutions, credit union share draft accounts, and demand deposits at mutual savings banks.  |
| M-2 ...  | M-1B plus Canadian dollar personal non-checkable and fixed-term deposits at chartered banks and nonpersonal noncheckable savings deposits at chartered banks.                              | M-2 ... M-1B plus savings and small-denomination time deposits at all depository institutions, overnight RPs* at commercial banks, overnight Eurodollars held by United States residents other than banks at Caribbean branches of member banks, and money market mutual fund shares. |
| M-3 ...  | M-2 plus Canadian dollar nonpersonal fixed-term deposits and bearer term notes at chartered banks and foreign currency deposits of Canadian residents booked at chartered banks in Canada. | M-3 ... M-2 plus large-denomination time deposits at all depository institutions, and term RPs at commercial banks and savings and loan associations.   |
|          |  | L ... M-3 plus other liquid assets such as term Eurodollars held by United States residents other than banks, bankers' acceptances, commercial paper, Treasury bills and other liquid Treasury securities, and United States savings bonds.   |

\*ATS = Automatic transfer account;  
NOW = Negotiable order of withdrawal account;  
RPs = Repurchase agreements.

## Box II: Foreign Currency Deposits in Canada

Foreign currency deposits of Canadian residents booked at the chartered banks in Canada, which are included in M-3, have no equivalent in the United States monetary definitions. Their importance in Canada reflects that country's close financial and commercial ties to the United States. Booked-in-Canada foreign currency deposits as a proportion of M-3 increased from 3.5 percent at the end of 1972 to 7.7 percent at the end of 1979. About 95 percent of these deposits is denominated in United States dollars, but no information is available on the term composition.

Resident deposits of foreign currency funds booked in Canada have come to play an important role as supplements to Canadian dollar-denominated deposits. In periods of monetary restrictiveness, these foreign-denominated deposits can afford the banks an additional source of finance for adjusting to pressure on

their domestic cash and liquidity position. Monetary management is also complicated in periods of currency weakness by residents' use of unhedged foreign currency deposits for speculation on further depreciation of the Canadian dollar. In the pending Bank Act revision the government proposed for the first time a reserve requirement of 3 percent on booked-in-Canada foreign currency deposits of Canadian residents.

The monetary aggregates do not include the foreign currency deposits of Canadian residents booked outside Canada. These deposits are not thought to be significant. With the new reserve requirement on booked-in-Canada foreign currency deposits, however, there may be incentive for the chartered banks to transfer business to offshore centers, and the importance of foreign currency deposits booked outside Canada could thus increase.

able and interest bearing. This checkable savings account paid a nonmarket-related fixed-interest rate of 3 percent and bore some similarity to the negotiable order of withdrawal (NOW) account in the United States.

As in the business sector, practices introduced after the 1967 Bank Act revision played an important role in determining the way consumers held their banking assets during the last decade. Legislative changes in the 1967 Bank Act, which eliminated the lending ceiling and changed the reserve requirement, encouraged the chartered banks to introduce a new, noncheckable savings account paying a market-related interest rate.

Over the next few years the banks also introduced a number of practices to discourage consumer use of the NOW-like checkable savings account by making it less convenient to use than demand deposits. Many banks thought at that time it would be more efficient to have a two-account system, in which a part of the funds was held as demand deposits and a portion kept in the recently introduced noncheckable savings account. Thus, deposits held in checkable savings account form actually declined for several years after the 1967 Bank Act and then grew very slowly during the 1970s.

Overall, the proportion of personal banking deposits held in savings accounts decreased in the years immediately following the 1967 Bank Act. A sharp fall in checkable savings accounts more than offset the movement into the new noncheckable savings accounts. The proportion held as demand deposits increased in this initial period. Over most of the 1970s, however, the distribution of personal deposits at Canadian chartered banks remained relatively stable. (Chart 2).

Last year, though, when interest rates rose to historically high levels, the proportion of personal banking funds held in demand deposits declined, as consumers tended to economize on noninterest-bearing assets. During this period of very high interest rates, consumers were able to earn a market rate of return on their banking funds because there was no interest rate ceiling on personal savings accounts in Canada.

Recent innovations in banking practice could make these shifts in funds even more responsive to movements in interest rates. One new practice concerns the computation of interest on the minimum daily balance in savings accounts. An important nonprice barrier to mobility between interest- and noninterest-bearing accounts in the past was the chartered banks' practice of calculating interest for personal savings accounts on the basis of the minimum amount of funds in the account each month.

The Canadian government had attempted unsuc-

cessfully on two earlier occasions during the 1970s to legislate a change in this practice. The banks argued, however, that daily-interest payment was prohibitively expensive, given their nationwide branch banking system, as long as the majority of their branches did not have computer access. In the meantime, two of the smaller chartered banks and several of the trust companies and credit unions had initiated daily-interest payment accounts. Finally, in August and September 1979, with the banks well on their way to a fully computerized network, all five of the large chartered banks introduced daily-interest noncheckable savings accounts. Interest on these accounts is  $\frac{1}{4}$  to  $\frac{3}{4}$  percent below interest paid on minimum monthly balance accounts.

The introduction of daily-interest savings accounts can influence the distribution of personal bank deposits in two ways: (1) funds can be shifted from other interest-bearing savings accounts into daily-interest accounts and (2) individuals can economize on demand deposits by switching funds into daily-interest accounts. It is the latter course which may cause difficulties for a targeting strategy based upon the narrow money stock.

One major factor presently hindering movement between demand deposit accounts and daily-interest savings accounts is a large fee charged by three of the chartered banks after more than one or two monthly withdrawals from the savings account. The fee ranges from Can.\$0.50 to Can.\$1.00 for each additional withdrawal. To some extent, individuals may begin to avoid the fee by using credit extended through charge cards instead of drawing down savings account balances. The monthly charge card payment could then be met by a single transfer of funds from a daily-interest savings account to a demand deposit account.

Another recent innovation in the household sector is an improved version of the checkable savings account, introduced by two of the major banks in the spring of this year. Like the existing checkable savings account, this hybrid account pays a fixed 3 percent interest rate. It represents an improvement over the old version, however, because interest is computed daily, and free checking is available with a small minimum balance. Deposits in these new accounts are included in personal savings deposits and are subject to a lower reserve requirement than demand deposits. If this innovation spreads to other chartered banks, it could become a competitor with demand deposits for personal transactions balances.

#### **A closer look at the Canadian monetary aggregates**

The Canadian definitions of the monetary aggregates, although generally similar to the United States mone-



tary measures, have certain distinctive features (Box I). The Canadians in their money stock definitions include only deposits at the chartered banks, while the United States monetary aggregates now include, not only deposits at commercial banks as well as thrift institutions, but also nondeposit instruments, such as money market mutual funds and commercial bank RPs.<sup>5</sup> Another important distinction is that the broadest Canadian monetary aggregate—M-3—includes foreign currency deposits of Canadian residents, booked at the chartered banks in Canada (Box II). There is no counterpart to these deposits in the United States financial structure.

To highlight the different growth patterns over the last decade of the Canadian monetary aggregates relative to gross national product (GNP), the velocity of each aggregate is illustrated in Chart 3. The velocities of the narrow Canadian money measures—M-1 and M-1B—have tended to rise over the time period. This is in marked contrast to the broader aggregates which include savings and term deposits. The velocities of these money measures—M-2 and M-3—have been comparatively constant over the last decade.

The velocity movements of the United States monetary aggregates (Chart 4) are very similar to those of Canada. The velocities of M-1A and M-1B, which are meant to comprise transactions balances, exhibited a rising trend over the 1970s, while movements in the velocities of broader aggregates—M-2 and M-3—like their Canadian counterparts remained relatively constant.

These velocity patterns suggest that over the 1970s the Canadian and United States banking public desired to hold an increasingly larger proportion of their financial assets in interest-earning instruments and had economized on their transactions balances. The sharp increases in the general level of inflation and interest rates during the 1970s were important factors behind the velocity growth patterns. When the cost of holding noninterest-bearing transactions balances rose, the public tended to economize on its demand deposits relative to the level of transactions. These balances were turned over more quickly to maximize holdings of interest-bearing instruments.

<sup>5</sup> The most important deposit-taking institutions in Canada, in addition to the chartered banks, are trust companies, mortgage loan companies, credit unions, and caisses populaires. In 1979, these nonbank institutions accounted for 19 percent of all checkable deposits (interest and noninterest bearing), while in 1975 their share of transactions and quasi-transactions balances was 17 percent.

Despite their relative importance, these near-bank deposits are not, as noted above, included in the Canadian definitions of the monetary aggregates. An important technical problem with doing so is that data for nonbank institutions are reported only monthly or quarterly, as opposed to the weekly reporting procedure for the liabilities of federally regulated chartered banks.

The growth pattern of the narrow money stock—M-1—is of particular interest to the Bank of Canada because it has set its monetary objectives in terms of this aggregate. The authorities decided to focus exclusively on M-1 since earlier research suggested that this money measure was best suited to Bank of Canada monetary control through adjustments in the general level of short-term interest rates.

During the mid-1970s, in both Canada and the United States, there was a decided slowing for a period in the growth of their respective narrow money stocks, relative to what would be expected from past relationships with aggregate income and interest rates. Corporate banking innovations, in the form of improved cash management techniques, appear to have been important for both countries in the public's changing pattern of money holdings. According to the Bank of Canada: "In the course of 1976 and 1977 there was a considerable acceleration for a while in the rate at which banks' larger customers took advantage of new facilities provided by the banks to manage their affairs satisfactorily with lesser current account balances relative to their transactions than they had previously needed."<sup>6</sup>

In the United States a similar slowing in the growth of the narrow money supply had been evident for some time. The Federal Reserve Board staff describes how "In the period encompassing 1975 and 1976 the expanding use of cash management techniques was largely responsible for the paring of transactions balances relative to GNP—particularly by large businesses—and for the corresponding jump in M-1 velocity."<sup>7</sup>

Some rough estimates of the impact these innovations have had in the United States and Canada can be made by estimating a conventional money demand equation for each country and by calculating the out-of-sample prediction errors for the periods during which the innovations occurred. The cumulative out-of-sample errors in projecting the narrow money stock for each country as a percentage of actual levels are illustrated in Box III. After allowing for the different timing in the widespread adoption of the innovations, the pattern is very similar for the two countries. In each case, the errors in predicting quarterly growth rates tended to cumulate very quickly during the initial periods. As the new practices worked through the financial systems, however, the rate of increase in the percentage errors slowed. At the end of the two years following the widespread adoption of cash manage-

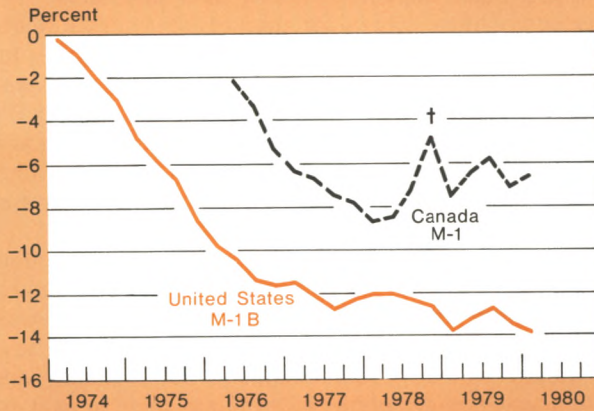
<sup>6</sup> Bank of Canada *Annual Report* (1979), page 24.

<sup>7</sup> "A Proposal for Redefining the Monetary Aggregates", *Federal Reserve Bulletin* (January 1979), page 21.

### Box III: Comparison of Canadian and United States Money Demand Equations

Chart 5

#### Out-of-Sample Forecasting Errors as a Percentage of Actual Levels \*



\* Out-of-sample forecasting errors for the two countries are shown for different periods because widespread usage of cash management techniques in Canada occurred somewhat later than in the United States.

† Postal strike.

The estimated parameters of the money demand equations used to make these forecasts are shown to the right (t statistics are in parentheses beneath the coefficients).

\* The disruption in the flow of payments during the Canadian postal strikes (in the spring of 1974 and last quarter of 1975) tended to inflate the level of demand deposits since checks sent through the mail were not delivered. The resolution of the strikes was followed by a sharp downward adjustment in the level of demand deposits as previously undelivered checks were cleared. Dummy variables were included for the postal strike quarter and the quarter immediately after the strike to account for these temporary interruptions in payments patterns.

#### Canada:

$$M_t = -1.62 + 0.792M_{t-1} - 0.046FP_t + 0.184Y_t + 0.038DUM1 - 0.026DUM2$$

(4.37)    (13.63)    (6.73)    (5.15)  
(3.98)    (2.68)

where:

$P_t$ : GNP price deflator

$M_t$ :  $\ln(\text{Money}_t/P_t)$

$M_{t-1}$ :  $\ln(\text{Money}_{t-1}/P_t)$

$FP_t$ :  $\ln(\text{Finance paper rate}_t)$

$Y_t$ :  $\ln(\text{GNP}_t/P_t)$

DUM1: Postal strike dummy variable set equal to 1 for 1974-Q2 and 1975-Q4, zero otherwise\*

DUM2: Quarter after postal strike dummy variable set equal to 1 for 1974-Q3 and 1976-Q1, zero otherwise\*

Estimation period: 1956-Q2 to 1976-Q1

#### United States:

$$M_t = 0.550 + 0.708M_{t-1} - 0.011R_t - 0.021D_t + 0.157Y_t$$

(1.62)    (6.85)    (3.24)    (1.44)  
(4.11)

where:

$P_t$ : GNP price deflator

$M_t$ :  $\ln(\text{Money}_t/P_t)$

$M_{t-1}$ :  $\ln(\text{Money}_{t-1}/P_t)$

$R_t$ :  $\ln(\text{Commercial paper rate}_t)$

$D_t$ :  $\ln(\text{Effective passbook rate}_t)$

$Y_t$ :  $\ln(\text{GNP}_t/P_t)$

Estimation period: 1959-Q2 to 1973-Q4

(The United States equation was corrected for first order auto-correlation with  $\rho = 0.650$ .) The errors are calculated by subtracting the predicted values from the actual values without any correction for past errors.

ment techniques, there was an 8.5 percent cumulative overestimation in the equation for the United States and a 7.9 percent overestimation for Canada.

The recent innovations in the household banking sector are probably too new to have worked through the banking system. Therefore it is still too early to evaluate fully the impact of these innovations on the growth of M-1 in Canada. The Bank of Canada

said in its latest *Annual Report*, however, that so far the indications are that the effect is not large.<sup>8</sup> The Bank does, nonetheless, consider the increasing usage of the daily-interest savings account significant enough to have cited the innovation as one explanation for the relatively slow growth of M-1 during the second

<sup>8</sup> Bank of Canada *Annual Report* (1979), page 25.

quarter of 1980.<sup>9</sup> No action has been taken, however, to adjust the targets for M-1 because of this development.

### **Conclusion**

Under the stimulus of rising inflation and interest rates, important financial innovations in the United States and Canada during the last decade have altered the way the public holds its monetary assets. These changing practices have implications for the conduct of monetary policy because they can make the definition and setting of monetary growth targets more difficult.

In the United States the regulatory environment for banking has been relatively more restrictive than in Canada. Innovation in this country thus led, in some part, to the development of new financial instruments less subject to regulations. Given the impetus of rising interest rates, the public found new nondeposit assets to manage their transactions balances more efficiently. The Federal Reserve's redefinitions of the monetary aggregates in February was partly a response to these changing practices. With the implementation of the

Monetary Control Act over the next several years, some of the restrictions on the banking system will be eased.

In Canada the regulatory environment for the chartered banks' deposit-gathering activities has remained relatively constant and unrestrictive through most of the period since the 1967 Bank Act. The pending Bank Act revision largely continues this approach. Because bank deposit interest rates in Canada are fully competitive with other market alternatives, there has not been the same stimulus as in this country for investors to place funds outside the banking system. Recent bank innovation in Canada, in fact, particularly for the household sector, has been more the consequence of advances in computer technology which made certain practices feasible for the Canadian system of nationwide branch banking.

The Bank of Canada, while expressing caution, remains committed to its current monetary control strategy and the existing definitions of the money supply. The monetary authorities will naturally have to monitor these recent banking innovations, and others which may follow, to evaluate their impact on the Canadian public's demand for transactions balances over the months to come.

Laurie Landy

<sup>9</sup> Bank of Canada *Review* (June 1980), page 9.

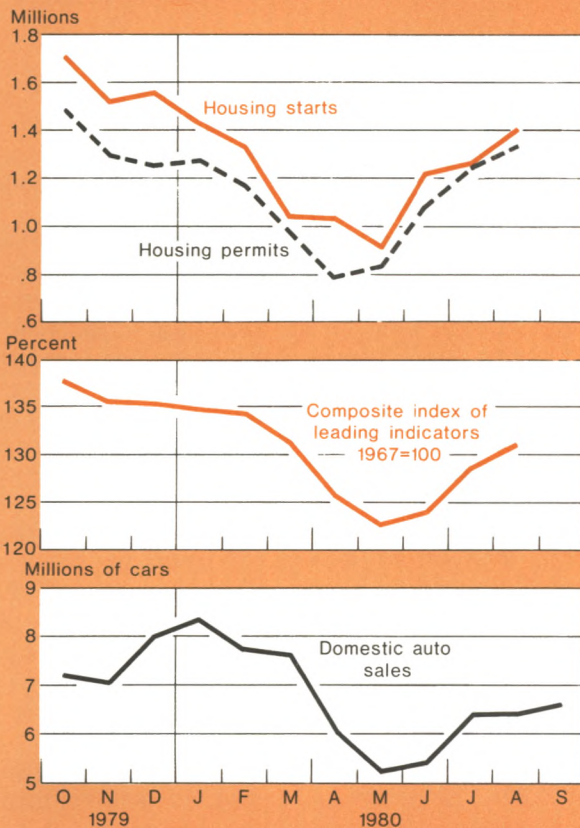


# The business situation

## Current developments

Chart 1

**During the summer months, economic indicators signaled that the recession was coming to an end.**



Sources: United States Department of Commerce and Board of Governors of the Federal Reserve System.

During the summer months, economic statistics seemed to indicate that the recession was ending. The index of leading economic indicators rose in June, July, and August. Automobile sales increased from the very low spring levels, and consumer purchases of other goods and services picked up as well. Homebuilding activity also rebounded during the summer, as mortgage rates declined rapidly from the record levels attained during the spring (Chart 1). As the summer ended, however, sharp increases in both short- and long-term rates raised questions about whether the rebound in housing activity could be sustained and about how strong the economic recovery would be.

Consumer spending was the primary factor contributing to the stronger outlook for the economy. Retail sales in constant dollars rose 3.3 percent from May to August, reversing about one third of the decline of the January-May period. Consumers, nonetheless, remained cautious, repaying an unprecedented \$9.5 billion in debt and maintaining a higher savings rate (Chart 2). In part, the upturn in consumer spending may have been spurred by the July cost-of-living adjustment in social security benefits, which amounted to almost \$18 billion at an annual rate. The lifting of the March credit control program also contributed to the rebound in consumer spending. However, it is difficult at this time to assess whether there has been a lasting change in consumer spending attitudes.

Automobile sales, which had accounted for roughly three fourths of the decline in retail sales earlier in the year, gave a large boost to consumer spending during the July-September period. Consumers, however, still are showing a strong preference for foreign cars, and the domestic auto producers' share of the market remains at a low level. The new lines of fuel-efficient cars may help domestic producers gain a

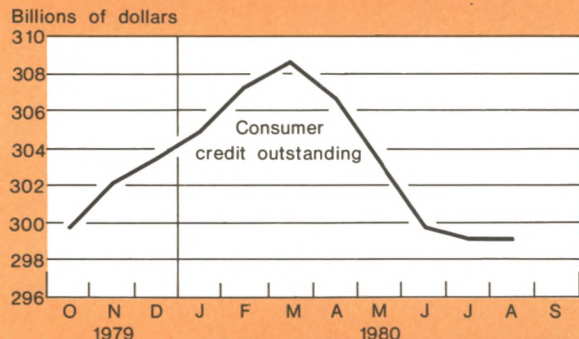


Chart 2

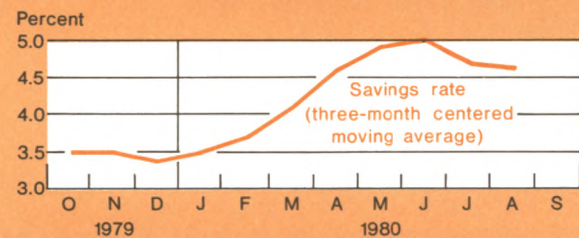
**Consumers have increased expenditures . . .**



**. . . while paying off a large volume of instalment debt . . .**



**. . . and maintaining a higher savings rate.**



Sources: United States Department of Commerce and Board of Governors of the Federal Reserve System.

larger market share. At the same time, the demand for these cars will be an important factor in determining the strength of the prospective recovery.

Another key factor in determining the strength of the recovery will be the performance of the housing market. Largely as a result of the decline in mortgage rates during the summer, the housing market rebounded sharply. Housing starts rose from a 900,000-unit annual rate in May to 1.4 million in August, and permits to build new housing units also increased by more than 50 percent during these months. Despite these large increases, housing production remains well below the levels recorded during the third quarter of 1979.

An increase in industrial production also signaled a turn in the economy. After six consecutive monthly de-

clines, the Federal Reserve Board's index rose in August and September. The two-month advance in the index was broadly based. Indeed, the sizable increase in production of durable goods was surprising because the inventory-to-sales ratio in the durables manufacturing sector has not declined significantly from levels comparable to the highest reached in the last recession.

The labor market reflected the improvement in economic activity. After rising steadily from February to May, the unemployment rate edged down to 7.5 percent during the summer. At the same time, the number of employed persons began to rise. A drop in initial claims for unemployment benefits also signaled improvement in the labor market.

Indeed, developments in the labor market—a decline in the layoff rate and an increase in the workweek—were important factors behind the summer advance in the leading economic indicators. This index rose in June, July, and August, the first series of three consecutive increases since the summer of 1978. Besides recent developments in the labor market, the strength in M-2 since June also contributed to the rise in the leading indicators.

Even as the recession seemed to be bottoming out, inflation continued at a rapid rate. Led by a sharp increase in food prices during July and August, the producer price index advanced at an annual rate of nearly 20 percent. Though the index edged down in September, its three-month gain was still more than twice the 6 percent rate of the second quarter.

The summer's food price increases at the producer level are beginning to be reflected at the consumer level as well. In August, consumer food prices rose at nearly a 30 percent annual rate. Despite the rise in food prices, the consumer price index has increased at a relatively moderate rate in recent months, largely as a result of the rapid decline in mortgage rates during the spring and summer and a decrease in energy prices. In coming months, however, some of the factors affecting the consumer price index are likely to shift again. There is some evidence that the rapid rise in food prices is winding down for the time being. By October, however, the rise in mortgage rates that began at the end of August will add to the rate of increase in the index. In addition, energy prices are likely to rise as a result of the continuing removal of domestic price controls and the disruptive effects of the military conflict in the Middle East.

All in all, the recent economic signals seemed to suggest that the recession was ending. Some of the recent developments, however, raise questions about how strong the recovery will be and leave open the possibility that economic activity could decline again after a brief upturn. The strong increase in consumer

spending, to the extent that it reflects the increase in social security payments and the lifting of credit controls, may not be sustainable over the next several months. For the automobile industry, tighter credit conditions and possible consumer resistance to the high prices for the new-model year point to an uncertain sales picture.

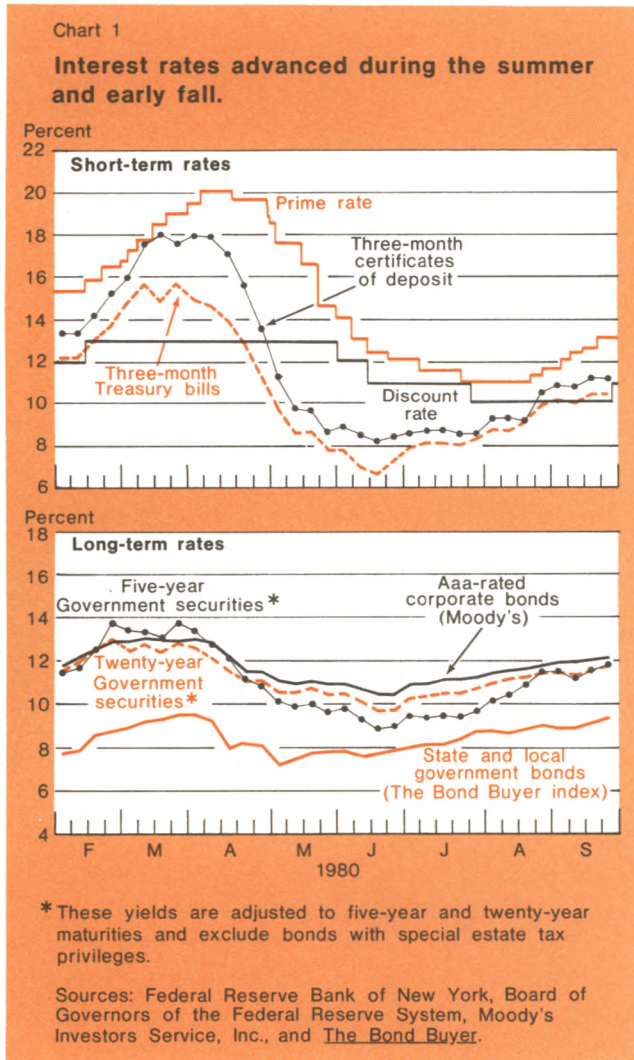
Home buyers also will be facing a tighter credit market this fall. If mortgage rates rise to spring levels,

the housing recovery would be curtailed. In the business sector, inventory levels that were more comfortable during the summer could become burdensome again if sales taper off, particularly in light of higher financing costs. And businesses continue to be cautious in their investment plans, reducing their planned capital expenditures for the rest of the year. Thus, even with business indicators pointing to an end to the recession, the economic outlook remains uncertain.



# The financial markets

## Current developments



The financial markets tightened substantially over the summer and early fall. Rapid inflation, signs of a bottoming-out of the recession, and strong monetary growth all added to expectations of higher interest rates. By late September, short-term interest rates stood more than 400 basis points above the lows reached last June (Chart 1). Long-term yields, including those on mortgage market instruments, were also much higher than they had been at the start of the summer. At the end of September, the Federal Reserve raised the discount rate from 10 to 11 percent.

In announcing the increase in the discount rate, the Federal Reserve reaffirmed its intent to contain the pace of monetary growth. Indeed, the narrower monetary aggregates, M-1A and M-1B, had grown very rapidly over the summer, making up for the shortfalls earlier in the year when these aggregates had fallen below the targets set by the Federal Open Market Committee (FOMC) for 1980 (Chart 2). According to the latest monthly statistics, M-1A was near the mid-point of the FOMC's targets while M-1B had risen above the top of the range. In terms of quarterly averages, however, M-1A was in the bottom half of its target range in the third quarter while M-1B was in the top half of its target range. The different positions of M-1A and M-1B relative to their respective target ranges reflect the extremely rapid growth of "other checkable deposits", which are included in the definition of M-1B but not of M-1A.<sup>1</sup> As a result, M-1B has outpaced M-1A by a margin of about 2 percentage points, compared

<sup>1</sup> Included in "other checkable deposits" are automatic transfer service (ATS) accounts, negotiable order of withdrawal (NOW) accounts, credit union share drafts, and demand deposits at mutual savings banks. For additional discussion of the definitions of the monetary aggregates, see the article "The Financial Markets, Current Developments" in the Spring 1980 issue of this *Quarterly Review*.



with the 1/2 percentage point difference between the M-1A and M-1B targets. The growth of the broader monetary aggregates also picked up. For example, the annual growth rate of M-2 over July and August was almost twice what it had been over the three previous months. As a result of the recent speedup, the September level of M-2 was slightly above the upper bound of the FOMC's target for 1980.

In the wake of the renewed monetary growth, market sentiment turned cautious and money market rates jumped. After bottoming out at 6.2 percent in mid-June, for example, the yield on three-month Treasury bills rose to about 11 1/2 percent by the beginning of October. Similarly, the rates on certificates of deposit (CDs), commercial paper, and other money market instruments paralleled the Treasury bill rate.

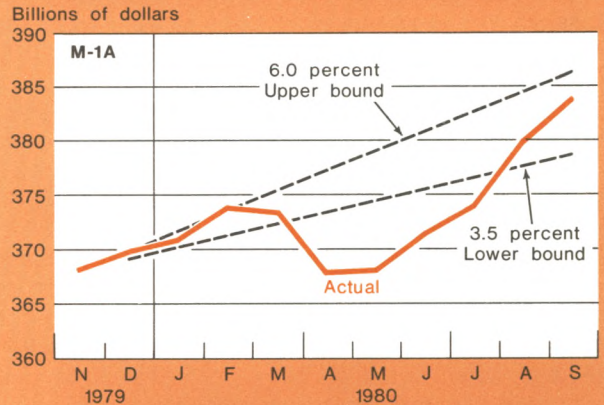
In response to the higher cost of funds, most commercial banks raised prime lending rates from the low of 11 percent to 14 percent. At the current level, prime lending rates are less than 2 percentage points above the rates on commercial paper of various maturities—well within the spread usually separating these rates. Just last spring, this spread had widened to as much as 7 percentage points.

As the spread between the prime lending rate and the rate on commercial paper narrowed, many companies have turned to banks for their short-term credit needs instead of tapping the commercial paper market. In addition, some banks are bidding very aggressively to increase their share of this business, with scattered reports that several major money-center banks are making short-term, below-prime loans to select large national corporations. Consequently, business loans expanded at a very strong pace in recent months. From June 25 to October 1, business loans (including loans sold to affiliates but excluding bankers' acceptances) increased by \$8.3 billion whereas the amount of commercial paper issued by nonfinancial companies declined \$2.7 billion. This was essentially the reverse of the situation that had occurred over the previous three months when the sizable increase in commercial paper outstanding offset the decrease in business loans.

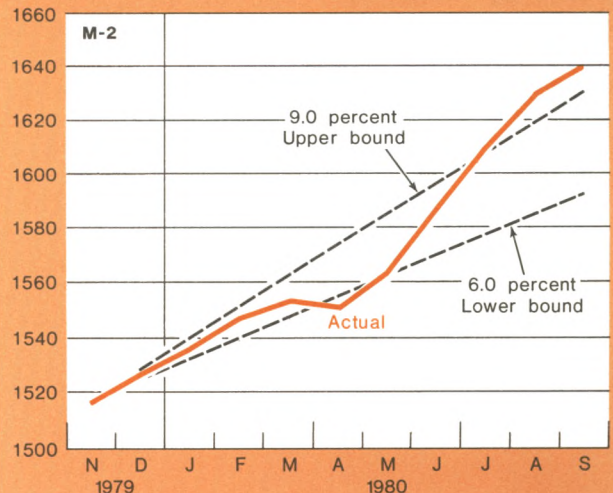
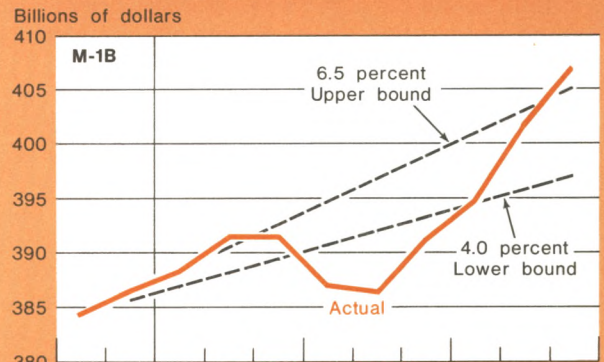
The recent bulge in short-term credit demand may in part be the result of sharply higher long-term financing costs. Indeed, longer term yields rose sharply over the summer and early fall, impelled by investors' worries that an economic recovery was beginning even before there had been any significant letup in inflationary pressures. By the end of September, the rate on five-year Government issues was 3 percentage points above the low reached in mid-June. While yields on Government issues with longer maturities also increased, the extent of the rise tended to be smaller

Chart 2

**By September, M-1A stood near the midpoint of the FOMC's 1980 target . . .**



**. . . while M-1B and M-2 were slightly above the upper bounds.**



Sources: Federal Reserve Bank of New York and Board of Governors of the Federal Reserve System.



the longer the maturity. Consequently, the yield curve on United States Treasury obligations has flattened out (Chart 3). It is unusual for the yield curve to flatten out so soon after reverting to an upward slope during a recession. For example, after the recovery from the severe 1974 recession commenced in March 1975, the yield curve remained upward sloping until mid-1978. Elsewhere in the bond market, the upward pressure on rates has been just as strong for corporate and tax-exempt securities as for Government issues.

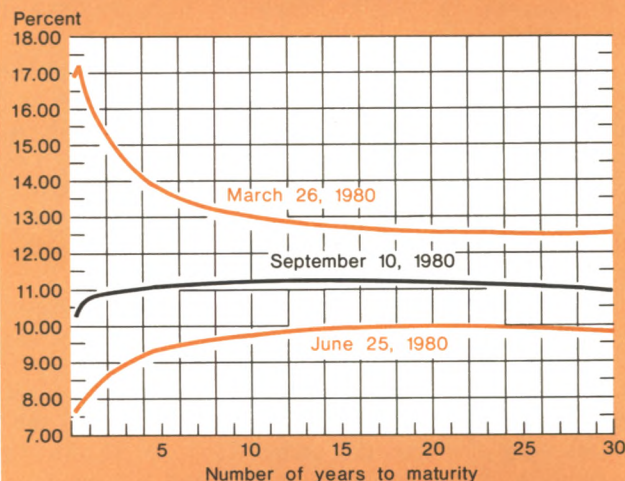
With bond yields on the rise, new corporate bond offerings have fallen off from the hectic pace of last spring. New corporate bond issues amounted to about \$4½ billion per month in the third quarter, more than \$2 billion below the monthly average for the second quarter and far below the record \$8.2 billion posted in June. Some of the recent decline in new issues involves temporary postponements, as companies chose to withhold new issues from the market in the hope that interest rates will soon come down. Still, at the pace of recent months, the volume of new corporate bond issues remains large by historical standards.

New municipal bond offerings also have been strong in recent months, although certain strains and stresses do appear to be developing within the tax-exempt market. New issues amounted to \$4½ billion on average in each month of the third quarter, off only about \$½ billion from the volume of the previous three months. However, the yield curve for tax-exempt municipal securities has taken on a very steep slope, with the spread between one-year and thirty-year securities exceeding 300 basis points during much of August. Over the past year, this yield spread was as low as 60 basis points and averaged roughly 130 basis points. One of the private rating companies has been downgrading many municipal securities, and this appears to have generated concern on the part of market investors about the long-term financial prospects of municipalities.

Mirroring the developments in the money and bond markets, albeit with a short lag, the mortgage markets began to get noticeably tighter toward the end of August. Earlier in the summer, conditions had eased considerably from the winter. In both June and July, the effective interest rate on lenders' new mortgage commitments declined and lending activity picked up.

Chart 3

The yield curve on United States Treasury obligations moved from a downward slope in March to an upward slope in June, and then flattened out by September.



Source: United States Department of the Treasury and the Federal Reserve Bank of New York.

Outstanding mortgage commitments by thrift institutions increased \$4½ billion during June and July, a sizable 23 percent gain over the low reached in May. But, as interest rates in the money and bond markets continued to rise, conditions in the mortgage markets started firming up in late August. By the end of September, the yield on conventional-mortgage commitments by the Federal National Mortgage Association (FNMA) was about 2 percentage points above what it had been at the mid-July auction. At the same time, the rate on newly issued mortgage commitments by lenders rose as much as 2¼ percentage points. Hence, lending activity is beginning to taper off. Although the latest data show that the volume of new mortgage commitments was still increasing in August, most of these newly issued commitments were the result of inquiries made many weeks earlier. Scattered reports suggest that new inquiries from prospective home buyers are now below what they were earlier in the summer.



# Recent Trends in the Federal Taxation of Individual Income

The Federal individual income tax is the largest source of Government revenue and a primary feature of the United States economy. The tax, however, was designed for a noninflationary economy. As a result, in an environment of rising prices, the impact of a particular tax code on the economy changes continually. The tax bite out of income—the tax as a percentage of income—expands, marginal tax rates—the highest statutory tax rates faced by individuals—climb, and the distribution of who pays the tax is altered.

The tax code, of course, has not remained the same. Major tax legislation was enacted in almost every year during the 1970s. Up until recently, the tax cuts that emanated from these legislative actions were essentially successful in holding down the aggregate tax bite. However, at present the tax bite appears to be at a historically high level. Moreover, the way in which taxes have been cut—relying heavily on raising the standard deduction and credits—has had dissimilar impacts on different income levels. Individuals with low income have benefited greatly by the tax reductions, so that their tax bite actually has declined over the years. Upper middle and upper income individuals, on the other hand, have experienced growing tax bites. Not until the 1978 tax legislation, the last piece of tax legislation in the decade, was most of the tax reduction directed toward them, but the reduction only partly offset the trends of the earlier years.

## Individual income taxes, growth, and inflation

The primary purpose of the Federal individual income tax is to raise revenue. Each year the tax accounts for almost half of the receipts of the Federal Government.

In addition to raising revenue, lawmakers have attempted to design the income tax system to be fair and equitable. The income tax also has been designed to promote certain economic goals. These goals have been advanced by a host of incentives, such as exempting several types of income from taxation, applying special tax rates, permitting credits for specific purposes, and reducing the tax base—the taxable part of income—for particular outlays.<sup>1</sup> For example, the exclusion from the tax base of a part of realized long-term capital gains aims in part at encouraging investment and at mitigating the tax on the inflation-induced price appreciation of capital assets.

The many goals that the income tax attempts to achieve have led to some conflicting results. For instance, while the tax system attempts to ease the tax burden of families, under certain circumstances it in fact can impose a higher burden on married couples than on single persons. In addition, although the tax favors income in the form of long-term capital gains, the taxation of dividends—another form of income from investment—to individuals represents double taxation as that income already has been taxed through the corporate income tax.

In addition to promoting specific economic objectives, the tax system affects the economy in other major ways. Because some features of the tax, *i.e.*, personal exemptions, are fixed in dollar terms or have a maximum limit associated with them, the taxable portion of income swings more widely than income

<sup>1</sup> The tax base is calculated by adjusting income for certain expenses and then subtracting deductions and personal exemptions.

itself. In addition, as taxpayers' incomes expand or contract, individuals tend to move into higher or lower tax brackets. Both the swing in the share of income that is taxable and the movement between tax brackets—the bracket effect—tend to exaggerate the response of taxes to changes in income. The elasticity of the tax with respect to income—the percentage change in the tax as a result of a 1 percent change in income—has been estimated to be about 1.5.<sup>2</sup>

In a period of price stability, the high income elasticity of the tax makes the tax a powerful stabilizing force in the economy. In a cyclical upturn, the tax claims a growing share of income, reducing households' purchasing power and spending. During a business downturn, employment falls and income declines. As a result, the tax bite falls, thereby cushioning the decline in spendable income.

In an inflationary period, the response of the tax to income growth can lead to a higher collection of taxes that compounds a cyclical downturn. Even in a recession, incomes may continue to expand as a result of climbing wages and prices. This inflation-induced rise in income leads to a larger tax bite, which tends to reduce households' spending power and economic activity. At the same time, inflation continually pushes individuals into higher tax brackets with correspondingly higher marginal tax rates.

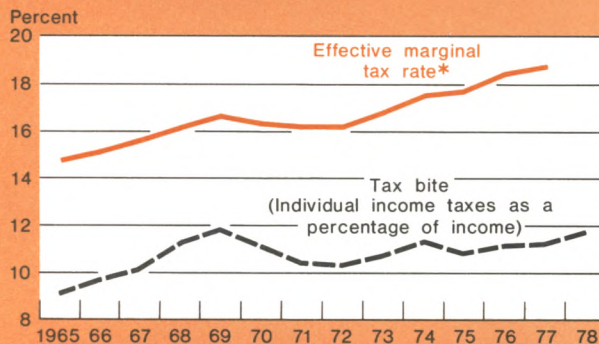
To mitigate these effects of inflation, legislation to lower the income tax has been enacted frequently. The tax reductions were accomplished in many different ways. The personal exemption and standard deduction were raised, credits expanded, and rates lowered.

The net impact of the interaction of growth, inflation, and legislation on the individual income tax will be examined here, using tax return data published annually by the Internal Revenue Service.<sup>3</sup> The study begins in 1965, a year after a major tax reduction was passed into law and the start of a period marked by high levels of inflation, and ends in 1978, the latest year for which comprehensive data are available.

### Has the tax bite risen?

In each year since 1965, individual income taxes have grown more rapidly than incomes, except when there was a statutory tax reduction.<sup>4</sup> Between 1965 and 1969,

**While taxes tend to rise sharply with inflation, frequent legislation has tempered the tax bite and, to a lesser extent, the effective marginal tax rate.**



**However, the bulk of the tax reductions have benefited lower income individuals, so that their tax burdens have declined while the tax burdens of upper income individuals have risen.**



\*The effective marginal tax rate is constructed here by weighing statutory rates by the fraction of tax returns for which the particular rate constitutes the marginal rate.

†Each income group represents 20 percent of all tax returns filed.

Sources: United States Internal Revenue Service, *Statistics of Income: Individual Income Tax Returns*, and United States Department of Commerce.

<sup>2</sup> See Joseph A. Pechman, "Responsiveness of the Federal Individual Income Tax to Changes in Income", *Brookings Papers on Economic Activity* (Vol. 2, 1977).

<sup>3</sup> Internal Revenue Service, *Statistics of Income, Individual Income Tax Returns*.

<sup>4</sup> Income is defined here to encompass the major components of cash inflow that are related most directly to taxation. Starting with personal income, individual social security contributions and realized capital gains are added in, and government transfer payments are subtracted out.

aggregate demand pressures were strong and taxes were raised by imposing a surcharge—10 percent at its highest level—from 1968 to 1970. As a result, the tax bite out of income grew sharply in the second half of the 1960s (upper panel of the chart). The demand pressures on capacity in the latter part of the 1960s were not sustained continuously throughout the 1970s. Nevertheless, inflation pressures were unrelenting, and incomes in current dollar terms rose rapidly even in years of considerable economic slack.

Legislation to counteract the response of taxes to this income growth managed for most of the decade to prevent the tax bite from rising above its peak level of 1969.<sup>5</sup> (However, data on Federal income tax payments suggest that the tax bite attained its highest level of the postwar period in the fourth quarter of 1979 at close to 13 percent.)<sup>6</sup> Between 1970 and 1978 the tax bite hovered around a level of 11 percent, about ½ percentage point above its average in 1965-69. If taxes had not been reduced by law, the fraction of income paid as individual income taxes would have represented a significantly greater share of income. According to the estimate of income elasticity presented above, the tax bite would have been 14 percent on average in the 1970-78 period, or about a third more than its actual level.

In contrast to the Federal income tax, other taxes paid by individuals advanced more sharply in those years. The sum of individual social security contributions and state and local individual income taxes as a percentage of income rose from 4.2 percent on average in 1965-69 to 6 percent on average in 1970-78. The rate of advance of these combined taxes was about eight times that of Federal individual income taxes.

While the income tax bite registered only a small increase during 1970-78, all income groups were not affected uniformly. During the 1970s, there was a widening dispersion among households in the fraction of income paid as income taxes. The change in the distribution of tax bite was primarily the result of the way in which legislation held down the expanding taxes, mainly through boosts in the standard deduction.

### Rise in deductions

The standard deduction was raised in seven of the ten

years between 1970 and 1979.<sup>7</sup> This, in combination with the inherent income sensitivity of itemized deductions, caused deductions to grow faster than income in almost every year since 1965 (table).

The standard deduction was introduced in 1944 to simplify tax preparation. For the next twenty years, it equaled 10 percent of a taxpayer's income, up to a maximum deduction of \$1,000. In 1964, the minimum standard deduction was established, setting a "floor" to deductions at \$200 plus \$100 for each personal exemption. The minimum standard deduction now is \$3,400 for married couples and \$2,300 for single persons and unmarried heads of household. The percentage deduction was eliminated in 1977 to simplify tax preparation.

The raising of the standard deduction has led to many more people taking the standard deduction than in the past. Only a little more than half (52.3 percent) of those individuals filing a tax return took the standard deduction in 1970. By 1978, this percentage stood at 73.6 percent. This growing role of the standard deduction in the determination of taxes deserves some analysis.

To the extent that deductions rise with income, they are a major factor that mitigates the responsiveness of the tax to income growth. Itemized deductions tend to increase by themselves in line with inflation. To a lesser extent, when the percentage deduction was permitted, the standard deduction also rose with inflation. The ending of the percentage deduction therefore increased the income elasticity of the tax.

The great expansion in the number of people taking the standard deduction also may have made the tax more responsive to income growth. Because the standard deduction is less sensitive to growth and inflation than are itemized deductions, the substitution by many people of the standard deduction for itemizing has reduced the role of deductions as a moderating factor. However, the rise in the standard deduction has reduced individuals' taxable incomes, and the consequential reduction of their marginal brackets has had the

<sup>5</sup> The major legislation to reduce Federal personal income taxes includes: the Tax Reform Act of 1969, the Revenue Act of 1971, the Tax Reduction Act of 1975, the Tax Reform Act of 1976, the Tax Reduction and Simplification Act of 1977, and the Revenue Act of 1978.

<sup>6</sup> The payments data probably overstate the tax bite in 1979. There seems to have been substantial overwithholding of taxes that year.

<sup>7</sup> The minimum standard deduction was increased in 1970 to between \$300 and \$1,100, with the exact level depending on a taxpayer's income and number of exemptions; in 1971 to \$1,050; in 1972 to \$1,300; in 1975 to \$1,600 for unmarried persons and \$1,900 for married persons; in 1977 (renamed the zero bracket amount) to \$2,200 for unmarried persons and \$3,200 for married persons; in 1979 to \$2,300 for unmarried persons and \$3,400 for married persons.

The percentage deduction was raised in 1971 to 13 percent up to a maximum of \$1,500; in 1972 to 15 percent up to a maximum of \$2,000; in 1975 to 16 percent up to a maximum of \$2,300 for unmarried persons and \$2,600 for married persons. In 1976 the percentage deduction remained at 16 percent, but the maximum amount that could be deducted through the percentage deduction was lifted to \$2,400 for unmarried persons and \$2,800 for married persons. In 1977 the percentage deduction was eliminated.



opposite effect of lowering the income-responsiveness of the tax.

The raising of the standard deduction also has influenced the distribution of the tax bite. Inasmuch as upper income individuals are most likely to itemize, the higher standard deductions have not benefited them very much. The tax saving from these legislative actions has accrued mainly to lower-income and lower middle-income groups.

This impact on the distribution of taxes has been reinforced by the decline in exemptions relative to income.

### Relative decline in personal exemptions

Because the personal exemption is fixed in dollar amount, its value is eroded over time by inflation. Despite this characteristic, the exemption has not been raised often, even though for many years it was considered by the Congress to be the most straightforward way to acknowledge the basic costs of supporting one's self, spouse, and dependents. From 1948 to 1969, the personal exemption stood at \$600 per person. In the early 1970s, it was boosted in several steps to \$750.<sup>8</sup> In 1979, it was lifted again, this time to \$1,000.

As a percentage of income, exemptions have fallen precipitously over time. Even in the period under study they have not kept pace with income despite the statutory increases of the early 1970s. By 1978, the ratio of exemptions to income had fallen to half its 1965 level (table).

The impact of the relative decline of exemptions on the tax bite has been largely offset by the rise in deductions. The sum of deductions and exemptions as a fraction of income has changed little since 1965 (table). Between 1970 and 1978, the ratio of the sum of deductions and exemptions to income was merely 0.4 percentage point lower than in the second half of the 1960s.

While the total of deductions and exemptions as a percentage of income has been stable since 1965, the expansion of deductions relative to exemptions has substantially changed the distribution of taxes across income groups. As mentioned above, the raising of the standard deduction has benefited mainly lower income taxpayers inasmuch as they tend to take the standard deduction rather than itemize. In addition, the decline of exemptions relative to income has been felt most heavily by upper income taxpayers because they tend to claim a somewhat greater number of exemptions than do lower income taxpayers, many of

### Deductions and Exemptions as a Percentage of Income

In percent

| Year | Deductions | Exemptions | Sum of deductions and exemptions |
|------|------------|------------|----------------------------------|
| 1965 | 11.9       | 17.3       | 29.2                             |
| 1966 | 11.8       | 16.7       | 28.5                             |
| 1967 | 11.9       | 15.9       | 27.8                             |
| 1968 | 12.2       | 15.0       | 27.2                             |
| 1969 | 12.8       | 14.5       | 27.3                             |
| 1970 | 13.4       | 13.9       | 27.3                             |
| 1971 | 14.9       | 14.1       | 29.0                             |
| 1972 | 15.7       | 14.1       | 29.8                             |
| 1973 | 15.5       | 13.1       | 28.6                             |
| 1974 | 15.8       | 12.6       | 28.4                             |
| 1975 | 16.0       | 10.7       | 26.7                             |
| 1976 | 16.2       | 10.0       | 26.2                             |
| 1977 | 17.1       | 8.8        | 25.9                             |
| 1978 | 18.7       | 8.2        | 26.9                             |

whom are single individuals. Other features of the tax also influenced the distribution of taxes in this period, namely, the rate structure and tax credits.

### Tax rates and credits

Taxes are calculated by applying tax rates to the tax base and then subtracting credits. The rate schedules differ according to the taxpayer's marital status. At present, for the same level of income, married couples filing jointly are subject to the lowest rates, followed by unmarried heads of household, single persons, and married couples filing separately. All the schedules are progressive, meaning that the tax rates escalate with income. The rates range from 14 percent to 70 percent, each rate applying to only the increment of taxable income that falls in the rate's bracket. The sizes of the brackets are uneven and tend to widen as one moves up the income scale.

The tax rate schedules have been altered occasionally since 1965 to influence consumer spending, the distribution of the tax bite, and work incentives. A surcharge was in effect between 1968 and 1970 to help reduce aggregate demand pressures. In 1969 the schedule for single taxpayers was lowered to bring it more closely in line with that for married couples. The minimum tax on preferentially treated income was made effective in 1970 to ensure that upper income individuals paid some amount of tax, and as of 1971 the maximum rate on earned income was set at 50 percent so as to reduce the adverse impact of the tax on work incentives. In another major change aimed at lessening the work disincentive effects of the income

<sup>8</sup> The personal exemption was set at \$625 for 1970, \$675 for 1971, and \$750 for 1972 and years following.

tax, the twenty-five brackets were consolidated into sixteen wider ones, effective in 1979. The widening of brackets lowered tax rates by expanding the income intervals of each rate. This change reduced the sensitivity of the tax to income growth by moderating the bracket effect.

The bracket effect arises from the progressivity of the rate schedule. In a period of growth and inflation, taxpayers are pushed into higher rate brackets, which act to raise taxes at a faster pace than the growth of income. The widening of these brackets reduces the chance that taxpayers enter a higher bracket because of income growth. The bracket effect is largest for those low-income households that cross the taxable threshold. For these households, the tax rate rises from zero to 14 percent. Thereafter, the statutory rate advances slowly. For married couples who file a joint return—the predominant filing status—the bracket effect on earned income disappears at levels of earned taxable income (*i.e.*, wages and salaries) of \$63,400 or higher because the maximum 50 percent rate then becomes applicable. However, increases in the level of earned income above \$63,400 still can cause “unearned” income, *i.e.*, interest income, to be taxed at a higher rate.

After tax rates are applied to the tax base, an individual’s tax liability is determined by subtracting tax credits. Tax credits gained importance in 1975 when a *per capita* credit (renamed the general tax credit in 1976) and an earned income credit were instituted. (A one-time tax rebate on 1974 tax liability and a temporary home purchase credit also were granted at that time.) The general tax credit expired at the end of 1978 when it was replaced by an increase in the personal exemption. The earned income credit is available only to low-income taxpayers who maintain a household and have dependent children. Its purpose is to lessen the burden of social security taxes and to mitigate some of the work disincentives created by the income tax. Other available credits are for child credit, retirement income, energy, and work incentives. Apart from the general tax credit, the tax credits have totaled only about 2 percent of personal income taxes.

Many of the credits that have been legislated have tended to benefit lower income taxpayers relatively more than higher income taxpayers. This is because some credits, *i.e.*, the earned income and work incentive credits, are applicable only to lower income taxpayers. In addition, all these credits have maximum limits which prevent them from rising proportionately with income. These dollar ceilings of the credits also have enlarged the income responsiveness of the tax. In these two respects, the reliance on credits to cut taxes has reinforced the effects of the increased stan-

dard deduction. In particular, the distribution of taxes displays the imprint of these legislative changes.

### Shifting distribution of taxes

The net effect of growth, inflation, and legislation on the distribution of the tax bite out of income has varied over time (lower panel of the chart).<sup>9</sup> Between 1965 and 1969, years when there were no statutory reductions, taxpayers in the lowest income group sustained the largest percentage increase in tax, with their tax bite rising by a third. Taxpayers in the top income group experienced the smallest advance in the tax bite, although it still was a hefty jump. Their taxes rose from 15 percent in 1965 to 17.9 percent of income in 1969, a rise of 19 percent.

After 1969, the frequent tax reductions mostly improved the positions of the lower income groups. Indeed, in 1978 the bottom 20 percent of taxpayers paid only 0.5 percent of their income as income taxes, compared with 2.9 percent in 1969. All income classes except the top 20 percent were taxed relatively less in 1978 than in 1969. The 1978 legislation, however, did not maintain this trend. By emphasizing rate reductions, replacing the general tax credit with a higher personal exemption, and cutting the capital gains tax,<sup>10</sup> the legislation targeted much of the tax reduction toward more affluent groups.<sup>11</sup>

The change in income taxes for lower income individuals is only part of the story, however. The sharp decline in the tax bite of lower income groups between 1969 and 1978 in part reflected the introduction of the earned income credit in 1975. As mentioned above, the credit is meant to offset the social security contributions of the lower income groups. Consequently, a complete analysis of taxes needs to take account of the impact of social security contributions on the different income groups.

If estimates of individuals’ social security contributions are added to income taxes, the tax bite displays different intertemporal patterns. Between 1965 and 1969 the middle-income groups, rather than the lower income groups, experienced the steepest advance of the combined taxes as a percentage of income. A sharp 62 percent increase in the maximum

<sup>9</sup> Changes over time in filing requirements make an intertemporal comparison such as this only approximate.

<sup>10</sup> The 1978 legislation increased the percentage of realized long-term capital gains that could be excluded from taxable income, from 50 percent to 60 percent, and eliminated this excluded portion of these gains from the list of items subject to the minimum tax. However, the legislation also introduced an alternative minimum tax to which the excluded share of long-term capital gains would be subject.

<sup>11</sup> See Benjamin A. Okner, “Distributional Aspects of Tax Reform During the Past Fifteen Years”, *National Tax Journal* (March 1979).

taxable earnings base for the social security tax was primarily responsible for this result. In addition, the social security tax rate climbed 32 percent. With the inclusion of social security contributions, the top 40 percent of taxpayers sustained a larger tax bite in 1978 than in 1969.

Overall, the interaction of growth, inflation, and legislative actions since 1969 has caused the distribution of the tax bite to become more progressive. The largest increase in the fraction of income paid as income and social security taxes has occurred among the top 20 percent of taxpayers.

### **Marginal tax rates**

Another important facet of the tax system is the marginal tax rate—the highest statutory tax rate that applies to a person's tax base. The marginal tax rate plays a significant role in many economic decisions. For example, whether to work additional hours or to increase the amount of income that is saved depends to some extent on the aftertax earnings or rate of return. Because the pay for working more hours or the return from greater saving comes on top of an individual's income, it is the marginal tax rate that determines the aftertax value of the extra compensation.

Since 1965 the effective marginal tax rate—the marginal tax rates averaged over all taxpayers—has risen in every year that did not experience a tax reduction and even in some years in which a reduction

did occur (upper panel of the chart). The tax cuts of the early 1970s pared the effective marginal rate. However, from 1973 to 1977 the rate rose without interruption as the tax legislation in those years emphasized the use of credits to reduce taxes. These credits did not push many individuals into lower brackets. Between the periods 1965-69 and 1970-77 the effective marginal rate rose about 75 percent faster than the tax bite.

The marginal tax rate has risen unequally across the income distribution, with upper income taxpayers—those in the highest 20 percent—having experienced the sharpest increase (lower panel of the chart). Their average marginal rate climbed by more than 40 percent, from 23.7 percent in 1965 to 33.6 percent in 1977. In contrast, the lowest 20 percent, benefiting the most from the tax cuts of this decade, actually faced lower marginal tax rates in 1977 than in 1965.

### **Conclusion**

The net impact of inflation, growth, and legislation on the taxation of individual income since 1965 has led to several significant changes. Legislative actions to reduce taxes have relied heavily on raising the standard deduction and credits. As a result, the relative tax reductions have accrued mainly to lower income groups. However, except for the lowest income groups, the marginal tax rates have increased. It was not until close to the end of the decade that legislation began attempting to turn around these trends.

Carl J. Palash



# Increasing Personal Saving: Can Consumption Taxes Help?

Substituting a tax on consumer spending for the personal income tax is widely viewed as a way to stimulate saving. Basically, this notion stems from the fact that income saved is exempt from a consumption tax while it is subject to an income tax. However, careful examination suggests that it is less than certain whether higher saving will result from this replacement. Moreover, the many difficulties associated with the introduction and use of a Federal consumption tax—its potential inflationary impacts, administrative problems, and issues of equity and intergovernmental relations—must be weighed against any prospective savings gains.

## **A Federal consumption tax: the alternatives**

Americans are familiar with paying taxes on their expenditures for goods and services. At the state level, for example, retail sales taxes are commonplace. While the Federal Government also uses such levies—mainly selective excise taxes such as the telephone tax—it has never taxed consumer spending in a comprehensive way. Rather, the primary sources of Federal receipts are income-type taxes—the personal, payroll, and corporate taxes—which account for about \$9 out of every \$10 of revenue.

The Federal Government could tax overall consumer spending in several different ways. Two of the most widely discussed alternatives are the value-added tax and the household expenditures tax. While the basic concept and economic effects of these taxes are similar, their structure and administration differ.

## *Value-added tax*

As the name indicates, the value-added tax is levied on a firm's value-added in production and distribution of goods and services. Basically, value-added is the difference between the dollar amount of a firm's sales and its purchases from other businesses. For example, the value-added of a miller is equal to the value of the flour he sells less the cost of wheat. In the income statement of a firm, the value of output of the firm is matched by the earnings of the factors used to produce the product. Thus, value-added can also be calculated as the total payments made to a firm's productive resources (wages, rents, interest, and profits as a residual). In the total economy, the gross national product (GNP) is a familiar example of a value-added computation, totaling the value-added of a nation's output.

While three variants of the value-added tax are often discussed, the so-called consumption type is the only one seriously considered for use in the United States.<sup>1</sup> This version is unique because it deducts from the tax base the purchase price of newly acquired capital assets. Since all business purchases—including acqui-

<sup>1</sup> In addition to the consumption type, there are also the gross-product and income types of the value-added tax. Under the gross-product type, the deduction of neither capital purchases nor depreciation is permitted so that the national tax base is equivalent to the GNP in the current year. In contrast, the income type allows depreciation deductions but is still levied on newly purchased capital goods as well as on consumption goods.

sitions of new capital goods—are deducted, the base is equivalent to total consumer spending.<sup>2</sup>

In calculating the value-added tax liability, the so-called credit or invoice method is generally favored due to its self-enforcing nature.<sup>3</sup> Under this form, a firm applies the tax rate to its sales in order to obtain its gross tax liability. The firm subtracts the taxes paid by suppliers (which are shown on its invoices) from this gross liability, yielding a net tax liability figure. To substantiate the computed liability, purchasers would demand receipts from suppliers stating the amount of tax in the sales price.

Firms incur no tax liability on the purchases of intermediate goods, because they receive a credit from the government for the value-added tax already paid by suppliers. Rather, the invoice mechanism acts to push the tax forward through subsequent production and distribution stages to the final sales price.<sup>4</sup> Since the consumer does not receive a credit for this tax, it is economically equivalent to a retail sales tax. In contrast to retail sales taxes, however, the value-added tax is usually not distinguished from the price of the goods at the retail level. Indeed, this is the case in the European Community's use of this tax. Of course, "hiding" it is not a necessity, and a separate accounting of the tax could be required.

<sup>2</sup> The consumption-type variant of the value-added tax is the most popular type for several reasons. On a practical level, it is easier to apply than other forms of the tax. Since all production-material purchases are deducted, there is no need to distinguish between investment goods and intermediate inputs. The resulting simplification in tax accounting (e.g., elimination of the need to determine depreciation allowances) is a feature that the income type does not have. Also, due to the particular treatment of capital in its base calculation, the consumption type is relatively more advantageous to new or growing firms than other variants. By allowing the immediate deduction of the total cost of a newly acquired asset, the consumption type puts firms in a better initial cash position than if the deduction for capital were taken later on, when the resources actually contribute to value-added. Firms will then be more able to meet the substantial start-up costs encountered when initiating a business.

<sup>3</sup> There are two other methods of calculating the base. The addition method is based on the fact that value-added can be calculated as the sum of factor payments—that is, wages, rents, interest, and profits. A firm then applies the statutory tax rate to the total in order to calculate its tax liability. Under the subtraction method, the firm calculates value-added by simply subtracting purchased inputs from sales. Its tax bill is then determined by applying the appropriate tax rate.

<sup>4</sup> It is generally assumed that the entire consumption-type value-added tax liability is passed forward to consumers in the form of higher prices. For example, in Britain, the Richardson Committee stated that in all probability the value-added tax would be fully passed on in higher prices. Full forward shifting is also assumed in the description of such a tax by a European Community research group in a report studying tax reform. In the Netherlands, estimates made by the Central Planning Board prior to the implementation of this tax assumed full forward shifting, as did the French government. For an extended discussion, see Eric Schiff, *Value-Added Taxation in Europe* (Washington, D.C.: The American Enterprise Institute, 1978), pages 24-25.

### *Household expenditures tax*

Another form of consumption taxation—though one commanding far less attention than the value-added tax—is the household expenditures tax (also known as a spendings tax).<sup>5</sup> Under this tax, consumers file an annual return, providing information necessary for the calculation of their total expenditures during the year, with the amount of the tax due based on these outlays. In this way, the administration of the tax resembles that of the existing personal income tax and differs from the collection procedure of the value-added tax, under which the legal liability falls on the producers of goods and services even though the consumer ultimately pays the tax.

A tax on spending does not require extensive records on expenditures during the year. Instead, consumers would figure annual expenditures indirectly as the difference between their income and the net increase in saving. The net increase in saving is determined as the amount by which the value of financial assets added to saving in a year exceeds the value of assets withdrawn from saving during that same period. (Unrealized capital gains or losses are not recognized in the measurement of net saving, since they would not affect the expenditures estimates. Any adjustment in asset value represents an equal change in both income and saving if it is unrealized during the year and would, therefore, net to zero in calculating expenditures as the residual.) Careful bookkeeping of changes in wealth is required, though this task is most likely less onerous than accounting for all outlays.

### **Consumption taxes and saving**

Replacing the income tax with a consumption tax (such as the value-added tax or spendings tax) is widely viewed as a boon to saving. Total saving is expected to rise because of two adjustments which result from the tax substitution: an increase in the aftertax rate of return to saving and a redistribution of disposable income.

### *Alternative taxes and the return to saving*

When a person saves, present consumption is delayed in exchange for future consumption. By replacing the income tax with a consumption tax, the rate of return to saving (that is, the value of additional future consumption per dollar of postponed current consumption) increases. The basis for this lies in the amount of in-

<sup>5</sup> Both India and Ceylon used a personal spendings tax in the late fifties and early sixties. However, both countries restricted the tax base to such a small number of upper income persons that the revenue yield was not considered worth the burden of compliance and administration.

## Rate of Return to Saving under the Alternative Taxes

| Derivation of the rate of return                                | Income tax                  | Consumption tax           |
|---|-----------------------------|---------------------------|
| Income .....  | \$ 100                      | \$100                     |
| Tax rate .....  | 20%                         | 25%                       |
| Maximum current period consumption* .....                       | \$ 80                       | \$ 80                     |
| Maximum current period saving† .....                            | \$ 80                       | \$100                     |
| Assumed market rate of return on saving .....                   | 10%                         | 10%                       |
| Gross market return on saving‡ .....                            | \$ 8                        | \$ 10                     |
| Maximum consumption possible with gross return on saving§ ..... | \$6.40                      | \$ 8                      |
| Rate of return to postponed consumption   .....                 | $\frac{\$6.40}{\$80} = 8\%$ | $\frac{\$8}{\$80} = 10\%$ |

\* With a 20 percent income tax, only \$80, *i.e.*, \$100 (1-0.2), is left after taxes to spend. With a 25 percent expenditures tax, a similar result obtains. The tax liability incurred by \$1 of expenditure is 25¢. Thus, \$80 worth of expenditure would exhaust the \$100 in income since the remaining \$20 is owed as tax.

† Under an income tax, only \$80 is available after tax to save. Since under a consumption tax a tax liability is incurred only if income is spent, the entire \$100 can be saved.

‡ The gross return (*i.e.*, before taxes) under the income tax equals the amount saved and invested times the market rate:  $\$80 \times 10\% = \$8$ . Under the consumption tax, \$100 was saved, thus the return equals  $\$100 \times 10\% = \$10$ .

§ The return under the income tax provides only \$6.40 of additional consumption, since the gross return (\$8) is subject to a 20 percent tax rate before it can be spent. As described above, the \$10 return arising under the consumption tax can buy at most \$8 of consumption, with the remaining \$2 representing the tax payment.

|| Expressed as the ratio of the additional spending made possible by saving to the present consumption postponed due to that saving, *i.e.*, line 7 of the table divided by line 3.

come available for investment under each tax.<sup>6</sup>

The differing rates of return associated with the alternative taxes are illustrated in the table. For purposes of comparison, the income and consumption tax rates are set so that the most an individual can consume with his current income is the same under each tax (\$80 in the example), and that all his present income is saved and invested at some assumed market rate (10 percent). Under the income tax, the tax liability is incurred before the individual decides what to do with his money—whether he spends or saves all of it, or does some combination of the two. This is not true in the case of the consumption tax. Here, the tax liability is created only when the income is spent. By postponing current spending the tax liability associated with that spending is also deferred and is thereby available, in addition to the value of the delayed consumption, for investment. Thus, in the example, a total of \$100 can be invested under the consumption tax (\$80 of post-

poned consumption and \$20 of postponed tax liability), as opposed to \$80 under the income tax.

Since more of the taxpayers' income can be invested under a consumption tax than under an income tax, the earnings on the initial investment will also be greater. But it is not simply the money earned that is of prime concern. Rather, in determining the rate of return on the initial postponed consumption, the value of future consumption that can be purchased with that money is of key importance. Under the income tax, interest income is subject to the tax before being spent, and thus only a fraction of the gross return represents additional consumption (80 percent or \$6.40). Likewise, the income earned under the consumption tax will not totally represent additional consumption, since part of the money must be used to pay the tax on purchases of goods and services. After taxes are fully accounted for, and the net-of-tax return in each case is compared with the amount of postponed spending which gave rise to the additional consumption, the rate of return under the consumption tax exceeds that available under the income tax (in the example, 10 percent as opposed to 8 percent), and equals the market rate of return.

In sum, taxpayers can escape the current consumption

<sup>6</sup> The following is influenced by Richard Goode, *The Individual Income Tax* (Washington, D.C.: The Brookings Institution, 1976). It is assumed throughout, for purposes of comparison, that the taxes considered give rise to equal yields. For a related discussion, see the paper by James Fralick in Jared Enzler, *ed.*, *Public Policy and Capital Formation* (Board of Governors of the Federal Reserve System, forthcoming, 1980).

tax liability on income that is saved. By being allowed to invest both the value of the postponed consumption and the deferred tax liability, enough additional future consumption is made available to yield a market rate of return on the initial postponed spending. The benefit of investing the delayed tax liability on income intended for saving is not available under the income tax, the result being an aftertax rate of return less than the market rate.

Although it is sometimes taken for granted that an increase in saving will result from the higher return, the impact is, in principle at least, unclear. While the incentive to save is increased by a more lucrative return than under the income tax, there is also reason to decrease saving since the higher rate of return allows a desired level of wealth to be achieved with less saving.

Empirical studies on the impact of the rate of return on saving also fail to provide a consensus. Some of the results support the notion of a positive response of saving to an increase in the aftertax rate of return, while others indicate no response at all.<sup>7</sup> Moreover, even in those studies which find a positive relation between interest rates and saving, the impact is found to be numerically modest—on the order of a 0.4 percent rise in private saving for every 1 percent increase in the aftertax rate of return. One point seems clear: the presumption that a higher return to saving (resulting from the tax substitution) will spark a substantial increase in the amount of saving undertaken (or any increase at all) is not well founded. Much ambiguity remains and, until more information becomes available, such a conclusion is premature.

#### *Increasing the capacity to save by redistributing taxes*

A change in the form of taxation also can increase total saving by redistributing income. Insofar as different groups have differing tendencies to save out of an additional dollar of income, total saving can be increased by simply shifting the distribution of income toward consumers likely to save an above-average portion of the extra income. If a consumption tax is substituted for the income tax, disposable income will be distributed differently, but the question remains whether saving will be increased.

<sup>7</sup> Estimates of a positive response can be found in Colin Wright, "Some Evidence on the Interest Elasticity of Consumption", *American Economic Review* (September 1967), pages 850-55; and Michael Boskin, "Taxation, Saving and the Rate of Interest", *Journal of Political Economy* (Part 2, April 1978), pages 1-25. A critique of the Boskin results, as well as evidence for the insensitivity of saving to interest rate changes, is contained in Philip Howrey and Saul Hymans, "The Measurement and Determination of Loanable-Funds Saving", *Brookings Papers on Economic Activity* (1978, 3), pages 655-85.

Available evidence indicates that in any given year saving as a fraction of income tends to increase with income. Since the income tax is progressive—i.e., the higher the income level the greater the tax payments as a percentage of income—its burden is heavier for those with above-average ratios of saving to income. In contrast, the consumption tax burden is heavier for those with lower savings rates. Hence, the tax substitution would reallocate disposable income toward the group which, on average, saves more.

However, this does not necessarily insure an increase in aggregate saving, since a group with a higher average savings rate may not save the average rate out of an additional dollar of income. The high-income groups might save more or less, making it difficult to know precisely what the net effect would be. To the extent that high-income groups do save more out of each additional dollar than low-income groups, introducing a consumption tax would tend to increase total saving since the additional saving of upper income groups resulting from their increased income would exceed the fall in saving of lower income groups resulting from their decreased income. Alternatively, if the proportions in which different income groups save and spend the additional income are the same, there will be no effect. In this case, income is simply redistributed among groups which have an equal tendency to save (or dissave) the additional income. The additional saving of upper income groups would exactly offset the decreased saving of lower income groups.

Empirical studies of consumption behavior provide indirect information on this redistributive effect, though the results are not clear-cut.<sup>8</sup> Analyses of the consumption behavior of different income groups in a single period reveal a positive relationship between the average and the incremental behavior.<sup>9</sup> Calculations based upon these findings indicate that the increase in saving resulting from a redistribution of tax burdens would range from 6 percent to 10 percent of the total tax yield involved in the switch.<sup>10</sup> In other words, saving would

<sup>8</sup> The potential effect on saving cannot thoroughly be studied without also considering the impact of the redistribution on investment and on total income. However, rather than complicate matters, a useful first approximation to the effect on saving can be obtained by assuming that personal income remains constant. With this simplification, the question of how much people save from an additional dollar of income can be reinterpreted as how much is consumed from that dollar—a question which has been studied extensively.

<sup>9</sup> For example, Ralph Husby, "A Nonlinear Consumption Function Estimated from Time-Series and Cross-Section Data", *Review of Economics and Statistics* (February 1971), pages 76-79.

<sup>10</sup> A survey and brief discussion of these estimates can be found in George Break, "The Incidence and Economic Effects of Taxation", in Alan Blinder, et al., *The Economics of Public Finance* (Washington, D.C.: The Brookings Institution, 1974), pages 192-94. These estimates only consider flat-rate consumption taxes.

increase by \$6 billion to \$10 billion for every \$100 billion of personal income tax replaced by a consumption tax. However, there is a difficulty in the interpretation of cross-sectional results for the purpose of resolving questions about income redistributions. Moreover, in contrast to the cross-sectional results, time-series analysis supports the idea that a redistribution of income will not affect total saving.<sup>11</sup> While current thought favors the time-series conclusion that little permanent savings gain can be obtained by redistributing income, it appears that, in practical terms, no definite conclusions about this mechanism can be drawn at present.<sup>12</sup> More information is necessary.

Furthermore, even if the redistributive mechanism resulted in an increase in saving, any progressivity in the structure of a consumption tax which replaced the income tax would likely lower the gain in saving relative to that available with a flat-rate consumption tax. Simply put, replacement of the income tax with a progressive tax would shift less of the tax burden from upper to lower income groups than replacement by a flat-rate tax. Most policies recommending the use of a personal spendings tax usually include the provision of a graduated or progressive rate structure. While a progressive rate structure, *per se*, is not an issue in the case of the value-added tax, certain exclusions in the tax base used to mitigate the potential increased tax burden to low-income households (discussed below) would cause a similar reduction of the gains in saving from the redistributive effect.

### **Costs of the tax change**

The possibility of increased personal saving is only one aspect of the tax substitution scheme. Such a massive overhaul of our tax structure raises several other difficult questions which need to be explored. These include the potential inflationary impact of the tax switch, considerations of equity, the relative administrative burdens of the taxes, and issues of inter-governmental relations.

### ***Inflationary potential of the substitution***

Concern is often expressed that the replacement of

the income tax with a value-added tax may initiate or intensify inflationary pressures. However, a major structural tax change primarily alters the method by which government funds are collected from taxpayers. Surely relative prices can change, but how is it possible for the average level of prices to rise continually, or to increase at all, because of the tax substitution? The answer lies both in the way price changes are measured and in the potential reactions to price level increases.

The nation's foremost barometer of inflation—the consumer price index—does not treat all taxes equally. In particular, the income tax is not reflected in the price index whereas a value-added tax would be, since the latter is included in the price of goods at the retail level. As a result, a retail price increase attributable to an increase in the value-added tax is reflected in the index just as is a price rise due to cost or demand pressures. By shifting from an income tax to a consumption tax, the consumer price index would initially jump because the reduction of income taxes would not be tallied in the index while the increase in the value-added tax would. Of course, the one-time increase in measured inflation is not, on its own, disconcerting. However, this essentially spurious rise in measured prices can have longer term effects. In particular, the initial price increases could both indirectly exacerbate inflation by raising inflationary expectations and directly spur inflation through cost-of-living adjustments. These likely reactions make hiding the value-added tax in the final sales price detrimental from an inflationary perspective, since consumers and government would be less able to differentiate tax changes from price changes due to market forces.

### ***Equity considerations***

In addition to inflationary concerns, another source of opposition to the use of consumption taxes in place of an income tax is rooted in equity considerations. Because consumption taxes are borne relatively more heavily by lower income groups, in contrast to the progressive income tax, the substitution diminishes the progressivity in the Federal tax structure. This charge, while perhaps not applicable to a spendings tax with a graduated rate structure, is relevant for a consumption value-added tax levied in a flat-rate, no-exemption form.

Dealing with equity issues always involves difficult trade-offs. One important problem is that schemes to relieve the regressivity of a consumption tax may be self-defeating, since the potential gains in saving from a redistribution of disposable income are reduced as the consumption tax is made more progressive. Moreover, these schemes necessarily complicate the administration of the tax.

<sup>11</sup> For example, Alan Blinder, "Distribution Effects and the Aggregate Consumption Function", *Journal of Political Economy* (June 1975), pages 447-75.

<sup>12</sup> Even if aggregate saving is not independent of the income distribution, a qualification related to the redistributive effect must be noted. The magnitude of the change in aggregate saving will not, in general, be reflected in the simple difference between the average of the marginal savings propensities of the high and low savers. Rather, it will depend upon the weighted average of the marginal propensities to save, where the weights are the fraction of the total tax burden borne by each group. Thus, the redistributive effect may be diminished substantially, depending upon the incidence patterns of the taxes considered.

Among the ways of reducing the regressivity of the value-added tax are selected deductions—e.g., the exclusion of food purchases from the tax base—or the use of multiple rates.<sup>13</sup> However, in addition to a significant erosion of the tax base, preferential treatment can also cause inefficient use of society's resources, since the relative prices of items would not reflect their relative production costs. As a result, too many resources are channeled into the production of the exempt goods, while too little resources are allocated to making the taxed goods. A credit for low-income consumers, similar to the earned income credit, is one alternative to offering exemptions. Another possible solution is to adjust other taxes to compensate for the reduction of progressivity, although this, too, can have adverse side effects.

#### *Administrative considerations*

A truly comprehensive tax is difficult to implement, and both the value-added tax and the spendings tax have troublesome administrative aspects. Some of the problems also arise with the income tax, but others are unique to consumption tax use. Any realistic consumption tax proposal must face up to these technical matters.<sup>14</sup> In the case of the value-added tax, for example, a different procedure for calculating the tax base might be necessary in certain industries for which value-added is difficult to identify. Examples of these are banking and insurance, where the addition method, as opposed to the invoice method, is more appropriate.

A spendings tax also introduces new and complex compliance requirements both for taxpayers and the

government. The calculation of net saving means accounting for income items not recognized by the income tax. These cover, among others, cash gifts and interest on state and local bond holdings. Moreover, extensive purchases and sales of assets would make government monitoring of tax returns extremely difficult.

The purchase of durable goods would also present a unique problem. The cost of a consumer durable good should be spread over several years to reflect more accurately both the flow of service provided by the good (that is, the actual consumption of the good) and the purchaser's capacity to pay taxes. Obviously, such an adjustment greatly complicates the tax. A related issue is the treatment of the sale of a durable good prior to the end of its full service life. Some type of credit provision would be necessary if tax is initially paid on the full purchase price.

Expenses due to hardship would most likely require special consideration under a spendings tax, though this would cause administrative difficulty. For example, spending on repairs to a storm-damaged home would surely warrant different treatment from that for luxury items. Certain medical expenses are another involuntary expenditure that could be treated separately. However, a unique handling of hardship outlays introduces arbitrariness into the calculation of the spendings tax base, since that expenditures category is fairly broad and open to various interpretations.<sup>15</sup> Furthermore, such special treatment would increase the record-keeping requirements and reporting complexities of the tax. Expenditures could no longer be calculated as simply the difference between income and the net increase in saving, since preferential treatment of certain expenditures requires explicit accounting for those items.

Life insurance payments, too, would cause administrative difficulty under a spendings tax since these partly represent saving, with the proportion depending upon the particular type of policy held. A technically accurate method of handling these payments is to allow as saving that part of the premium which increases the cash value of the policy. However, this would introduce a significant record-keeping burden to

<sup>13</sup> The Ullman value-added tax bill, H.R.7015, exempts the retail sale of food and nonalcoholic beverages (including restaurant sales), the sale and rental of residential real property for use as a principal residence, medical care (including prescription drugs), and sales to government entities. Also exempt are exports, nonretail sales by farmers and fishermen, mass transit in urban areas, activities of tax-exempt organizations (as described in Section 501 (c) (3) of the Internal Revenue Code), other than unrelated business activities, educational activities of governmental entities, and interest. In addition, a small business with sales below \$20,000 a year could elect to be exempt from the value-added tax.

<sup>14</sup> The following discussion is by no means a comprehensive catalog of the administrative issues associated with the consumption taxes. For a more complete discussion, see *The Value-Added Tax and Alternative Sources of Federal Revenue* (Washington, D.C.: Advisory Commission on Intergovernmental Relations, August 1973); Richard E. Sliator, "Administrative Aspects of Expenditures Taxation", in Richard Musgrave, ed., *Broad-Base Taxes: New Options and Sources* (Baltimore: Johns Hopkins University Press, 1973); and the contrasting papers of David Bradford and Richard Goode in Joseph Pechman, ed., *What Should Be Taxed: Income or Expenditure?* (Washington, D.C.: The Brookings Institution, 1980). For some possible approaches to certain administrative difficulties arising with consumption tax use, see the United States Treasury publication, *Blueprints for Basic Tax Reform* (Washington, D.C.: United States Government Printing Office, January 1977).

<sup>15</sup> That special treatment of certain categories causes administrative problems is evident from actual experience. In Britain, for example, authorities were forced to determine if a popsicle was foodstuff, and thus exempt from their value-added tax (*Wall Street Journal*, November 21, 1979), page 1. Similarly, Burberry's Ltd. is currently engaged in a dispute with the United States Customs Service over the categorization of its trench coats. Due to epaulets on the coat, the Customs Service wants it classified as an "ornamented garment" and thus subject to more than four times the tax rate of garments that are not ornamented. Burberry's argues that the epaulets are not just ornamentation but "... the essence of the garment's traditional appeal" ("Trench Coat under Fire from Customs" *New York Times*, August 13, 1980, page D4).



taxpayers, in addition to being difficult for the government to monitor.

*Issues of intergovernmental relations*

Since not all areas have similar income distributions and consumption patterns, the replacement of the income tax with a consumption tax will result in an increased tax burden in certain regions. Thus, the tax change could make it politically impossible for these states and localities to increase their taxes further in the case of budget needs, as the combined tax bill would provoke resistance. This direct competition for state and local funds is an important issue in the decision to introduce consumption taxes.

**Conclusions**

Substituting a consumption tax for the personal income tax is a tax reform of huge proportions with potentially significant consequences. Proponents view it as a policy measure to increase saving. But careful review suggests their arguments are not completely convincing. Indeed, the evidence in favor is fragmentary at best, and at present there is no conclusive evidence that this change would increase saving significantly. Moreover, there are negative side effects which could result from the replacement. Before such a change is implemented, more assurance should be given that the gains from the tax substitution outweigh its prospective costs.

Robert DeFina

# Treasury and Federal Reserve Foreign Exchange Operations

Dollar exchange rates fluctuated widely over the six-month period under review. Numerous political and economic crosscurrents tended to impart volatility to the exchange markets. These included the profusion of uncertainties surrounding political developments in Iran and Afghanistan and the shifting prospects for major industrial economies in dealing with the ill effects on their inflation rates and current account positions caused by the further rise in prices for oil. Market participants were also concerned about the possibilities of unsettling capital flows as the Organization of Petroleum Exporting Countries (OPEC) sought to invest the excess funds generated by their massive current account surpluses. Nevertheless, the broad movements in exchange rates during the period resulted largely from the relative pressures of the demand for money and credit in the United States, compared with other industrial countries and as reflected in sharp swings in interest differentials between investments in dollars and other major currencies. On balance, the dollar advanced sharply through early April during the time in which there was an intense scramble for funds and soaring interest rates in the United States. Once that scramble subsided and United States interest rates fell back through mid-June, the dollar also declined. Thereafter, the dollar remained

vulnerable to bouts of selling pressure each time domestic interest rates tended to soften. But the selling pressures did not cumulate. By late July, with money demand in the United States picking up once again, interest rates here turned firmer and dollar rates in the exchange market also firmed. By this time also, the dollar was bolstered by the underlying improvement in the United States trade and current account positions and by indications of some reduction of our inflation rate.

For its part, throughout the period the Federal Reserve continued to adhere to the approach adopted last October 6, emphasizing bank reserves rather than the Federal funds rate as the primary operating variable in seeking to limit the growth of the monetary aggregates. When the demand for money and credit became extremely heavy in February and March, largely on the buildup of inflationary expectations at the time, the Federal Reserve's approach meant that not all the demand was met by increases in bank reserves. This effort was reinforced by the broader anti-inflation program announced by President Carter on March 14, which featured a tightening of fiscal policy but also included a program of special credit restraint by the Federal Reserve. Subsequently, when the demand for money and credit fell slack, and indeed the economy began to contract sharply, interest rates declined. Consistent with its approach, the Federal Reserve provided bank reserves at about the same pace as before. In late May and early July the special

A report by Scott E. Pardee. Mr. Pardee is Senior Vice President in the Foreign Department of the Federal Reserve Bank of New York and Manager of Foreign Operations for the System Open Market Account.

credit restraints were eliminated in two steps. Many market participants expressed concern that, by allowing interest rates to decrease so sharply and by eliminating the special credit restraints, the Federal Reserve was giving up on its anti-inflation efforts. This was hardly the case as reiterated by Chairman Volcker in testimony to the Senate Banking Committee in late July. Moreover, as the demand for money and credit regained strength in the United States toward the end of the period, the Federal Reserve's approach again meant that these demands were not fully accommodated.

In the context of unsettled exchange market conditions and volatility of exchange rates, the United States authorities intervened frequently during the six-month period, operating on both sides of the market. In the early phase through early April when the dollar was in demand, the United States authorities were able to acquire sufficient currencies in the market and from correspondents to repay earlier debt and to build up balances, buying German marks, Swiss francs, and Japanese yen. By late March-early April, the Trading Desk intervened on several occasions openly as a buyer of currencies to counter disorderly conditions in the market. Subsequently, when the dollar came under bursts of heavy selling pressure, the United States authorities intervened in size, selling German marks, Swiss francs, and French francs. By the end of July, the United States authorities were again accumulating currencies to repay swap debt and rebuild balances.

For the period as a whole, total intervention sales of currencies amounted to \$3,982.7 million equivalent, of which \$3,530.6 million was in German marks, \$291.4 million was in Swiss francs, and \$160.7 million in French francs. Total acquisition of currencies amounted to \$6,266.9 million, of which \$1,476.2 million was in the market and \$4,790.7 million was from correspondents; by currency, the acquisitions were \$5,691.1 million of German marks, \$357.8 million of Swiss francs, \$216.8 million of Japanese yen, and \$1.2 million of French francs. As indicated in Table 2, as of July 31, the Federal Reserve's swap debt to the German Bundesbank was \$879.7 million equivalent and to the Bank of France was \$166.3 million equivalent. Also during the period, as shown in Table 1, the Federal Reserve's reciprocal swap arrangement with the Bank of Sweden was increased by \$200 million to \$500 million.

Through the first seven months of the year, the Federal Reserve and the Treasury both realized profits on foreign exchange operations. Table 5 shows that the System realized \$14.5 million, the Exchange Stabilization Fund realized \$45.8 million, and the Treasury's General Account realized \$71.2 million in profits. On a valuation basis, as of July 31 the System showed

\$19.2 million in gains on outstanding foreign exchange assets and liabilities. However, the Exchange Stabilization Fund and the Treasury's General Account showed \$325.8 million and \$163.0 million in losses, respectively, on outstanding foreign exchange holdings and commitments.

### **German mark**

During the winter of 1979-80, as the exchange markets focused on the uncertainties surrounding the United States strategic and financial position in the Middle East and on the dollar's role as a reserve asset, the German mark had been bid up in the exchanges to a record high against the dollar. But before long the prospects for the continued appreciation of the mark became clouded. The massive increase in world oil prices and the expansion of the German economy had generated a far more rapid increase in import expenditures than in export revenues, leading to a dramatic turnaround in Germany's current account position. The current account had already swung from surplus into a DM 10 billion deficit in 1979, and an even larger deficit of as much as DM 20 billion was expected this year. Inflation also accelerated rapidly under the pressures of an economy running close to productive capacity and the persistent buildup of energy costs. Moreover, events in the international arena added to the market's sense of caution. Although political tensions in the Middle East still raised the possibility that holders of dollars from that region might switch into marks, the deterioration in great power relations following the Soviet invasion of Afghanistan also raised concern about Germany's exposure in Western Europe. As a result, capital began to flow out of the mark in search of other havens.

In these circumstances the mark had already slipped back from its highs early in the year to DM 1.7414 by end-January, and subsequent bouts of buying pressure did not readily cumulate. Thus, on two occasions in early February when concern about the dollar brought the mark into bursts of demand, the United States authorities quickly restored balance to the market with sales of \$240.8 million equivalent of marks. These sales were financed out of balances of the Treasury and the Federal Reserve and by drawings of the Federal Reserve in the amount of \$115.4 million under the swap line with the German Bundesbank. These operations raised the System's total mark swap debt with the Bundesbank to a peak of \$2,746.3 million equivalent for the six-month review period and steadied the mark around DM 1.7375.

In view of the deterioration in Germany's inflation and balance-of-payments performance, German economic policy moved toward greater restraint. The

Table 1

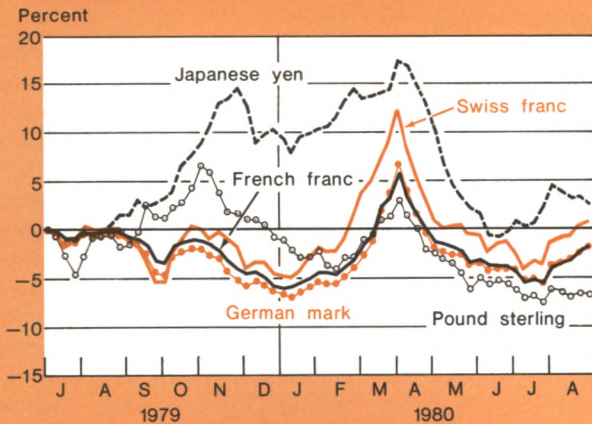
**Federal Reserve Reciprocal Currency Arrangements**

In millions of dollars

| Institution  | Amount of facility<br>January 1, 1980 | Increase effective<br>May 23, 1980 | Amount of facility<br>July 31, 1980 |
|--|---------------------------------------|------------------------------------|-------------------------------------|
| Austrian National Bank .....                       | 250                                   |                                    | 250                                 |
| National Bank of Belgium .....                     | 1,000                                 |                                    | 1,000                               |
| Bank of Canada .....                               | 2,000                                 |                                    | 2,000                               |
| National Bank of Denmark .....                     | 250                                   |                                    | 250                                 |
| Bank of England .....                              | 3,000                                 |                                    | 3,000                               |
| Bank of France .....                               | 2,000                                 |                                    | 2,000                               |
| German Federal Bank .....                          | 6,000                                 |                                    | 6,000                               |
| Bank of Italy .....                                | 3,000                                 |                                    | 3,000                               |
| Bank of Japan .....                                | 5,000                                 |                                    | 5,000                               |
| Bank of Mexico .....                               | 700                                   |                                    | 700                                 |
| Netherlands Bank .....                             | 500                                   |                                    | 500                                 |
| Bank of Norway .....                               | 250                                   |                                    | 250                                 |
| Bank of Sweden .....                               | 300                                   | 200                                | 500                                 |
| Swiss National Bank .....                          | 4,000                                 |                                    | 4,000                               |
| Bank for International Settlements:                |                                       |                                    |                                     |
| Swiss francs-dollars .....                         | 600                                   |                                    | 600                                 |
| Other authorized European currencies-dollars ..... | 1,250                                 |                                    | 1,250                               |
| <b>Total .....</b>                                 | <b>30,100</b>                         | <b>200</b>                         | <b>30,300</b>                       |

Chart 1

**The Dollar Against Selected Foreign Currencies**

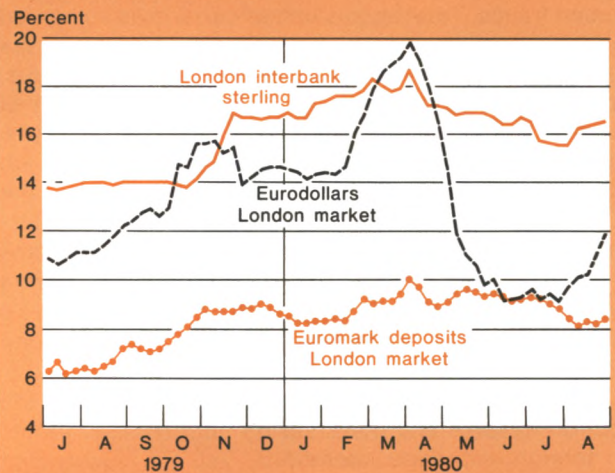


Percentage change of weekly average of bid rates for dollars from the average rate for the week of July 2-6, 1979. Figures calculated from New York noon quotations.

Chart 2

**Selected Interest Rates**

Three-month maturities\*



\*Weekly averages of daily rates.

authorities feared that rising energy prices would unleash a cycle of wage-price increases. Already there was some evidence of accelerating purchases by consumers and a buildup of business inventories, partly on the expectation of more inflation to come. Also, the uncertain outlook for capital inflows raised concerns about the prospects for financing the large current account deficit. Accordingly, the pace of government expenditures had already been reduced. On February 28 the Bundesbank raised the discount rate by 1 percentage point to 7 percent and the Lombard rate by 1½ percentage points to 8½ percent. But, to prevent liquidity from tightening too far in the face of a seasonal increase in money demand, the Bundesbank also increased commercial banks' rediscount quotas by DM 4 billion and removed borrowing limits under the Lombard facility. These actions brought official rates in line with German money market rates which were rising as the authorities kept the growth of central bank money within the 5 to 8 percent annual growth range in the face of mounting credit demands.

Meanwhile, however, short-term dollar interest rates were rising even more sharply as the Federal Reserve, adhering to the monetary policy adopted last October 6, restrained the growth of bank reserves in the face of a sudden resurgence in the demand for money and credit in the United States. As reports began to circulate that the United States authorities might impose credit controls to help stem the rise in inflationary expectations, a surge of precautionary borrowing ensued, which pushed United States domestic and Eurodollar rates to new highs. With interest differentials adverse to the mark widening progressively to reach 8½ percentage points in the early weeks of March, capital flowed heavily out of Germany and the mark declined rapidly in the exchanges. These outflows took the form of adverse commercial leads and lags, portfolio shifts by foreign investors, and a buildup of dollar balances by German residents. In addition, some professional and corporate borrowers around the world began meeting their financing needs in other currencies by borrowing marks and converting the proceeds in the exchanges.

The German authorities were concerned that the sharp depreciation of the mark would further aggravate domestic inflationary pressures through higher prices for oil and other imports. The Bundesbank intervened heavily to blunt the mark's decline, entering the Frankfurt market, where the pressures tended to concentrate, almost daily as a heavy seller of dollars both spot and forward. The authorities also took measures to induce sufficient capital inflows to help finance the current account deficit and to help offset the outflows of capital. In part, these entailed the relaxation of re-

strictions on capital inflows by permitting foreigners to purchase government securities, domestic bonds, and other mark-denominated promissory notes with maturities of more than two years (as opposed to four years previously). In addition, the government negotiated directly with foreign official institutions, notably those from OPEC, to obtain investments in mark assets. Meanwhile, through mid-March the United States authorities acquired \$2,751.7 million equivalent of marks from correspondents, mainly from the Bundesbank. Also, the Trading Desk intervened in New York, purchasing \$115 million equivalent of marks in the market. These marks were used to liquidate in full the Federal Reserve's outstanding swap debt with the Bundesbank and to make interest payments on the Treasury's securities issued in the German capital market. On balance, by mid-March the mark had declined 5 percent from early-February levels to DM 1.8265.

On March 14, President Carter announced a broad anti-inflation program that included actions aimed at balancing the fiscal 1981 budget, a surcharge on imported oil, and authorization for the Federal Reserve under the terms of the Credit Control Act of 1969 to impose special restraints on credit expansion. Accordingly, the Federal Reserve asked the commercial banks to hold their growth of lending to United States residents to 6-9 percent during 1980, required special deposits from nonmember banks and other lending institutions, and raised the marginal reserve requirement on managed liabilities from 8 to 10 percent for large member banks and United States agencies and branches of foreign banks. In addition, the Federal Reserve imposed a 3 percentage point surcharge on large member banks' discount window borrowings. The exchange market reacted positively to the package of special credit restraints as a sign of the United States authorities' determination to curb persistent and accelerating inflationary pressures.

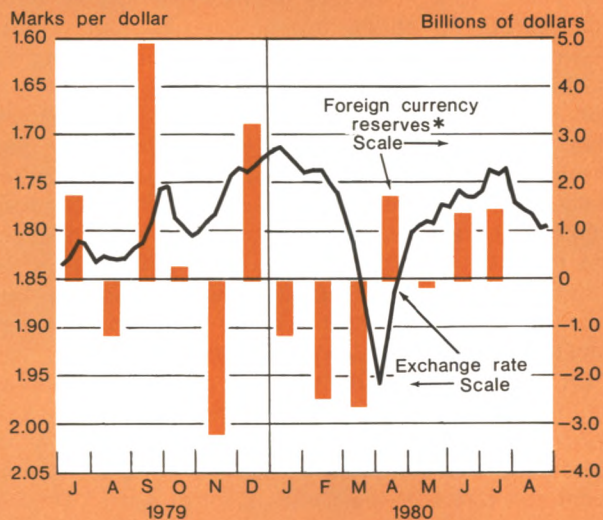
Following these measures the interest disincentive against the mark widened to some 10 percentage points as short-term dollar interest rates climbed further in late March and into early April, reaching peaks of 20 percent. As a result, interest-sensitive capital flowed even more heavily from Germany at a time when the continued deterioration of the current account deficit left the mark spot rate particularly vulnerable to downward pressure. Vigorous intervention to support the mark in these circumstances threatened a drain on Germany's foreign exchange reserves which the authorities feared would undermine confidence in the mark all the more. Therefore, the Bundesbank intervened somewhat less forcefully than in previous weeks and also supported the mark through sales of mark-denominated bonds to foreign official holders. By



Chart 3

### Germany

Movements in exchange rate and official foreign currency reserves



Exchange rates shown in this and the following charts are weekly averages of noon bid rates for dollars in New York. Foreign currency reserves shown in this and the following charts are drawn from IMF data published in *International Financial Statistics*.

\*Foreign exchange reserves for Germany and other members of the European Monetary System, including the United Kingdom, incorporate adjustments for gold and foreign exchange swaps against European currency units (ECUs) done with the European Monetary Fund.

April 8 the mark declined another 8½ percent, reaching a low of DM 1.9810 in Far Eastern trading while also dropping to the bottom of the European Monetary System (EMS). As the sale of marks against dollars gathered momentum between mid-March and early April, the United States authorities intervened forcefully to counter disorderly trading conditions, operating frequently in the New York market and, on one occasion, overnight in the Far East. The authorities purchased an additional \$741.5 million equivalent of marks in the market and another \$654.7 million equivalent from correspondents, which were added to System and Treasury balances. Meanwhile, the Bundesbank's heavy dollar sales were reflected in a \$5.1 billion decline in Germany's foreign exchange reserves from end-January to \$41.2 billion by end-March.

By this time, however, the German money market had tightened considerably and, even though the

Bundesbank had begun to offset the drain on liquidity of its dollar sales by entering into foreign exchange swaps, market participants expected a further rise in German official interest rates. By contrast, with the scramble for funds in the United States tapering off and with economic indicators suggesting a sharp slowing in the United States economy, market participants sensed that dollar interest rates would soon turn down. Under these circumstances, the mark came into immediate and heavy demand once interest rates in the United States showed unmistakable signs of declining in early April. Moreover, diminished prospects for a resolution of the hostage situation in Iran renewed concerns that official dollar holders in the Middle East would switch more of their surplus funds into European currencies—the mark in particular—as an alternative to dollar assets. On April 8-10 as dollar exchange rates declined across the board, the mark soared 5½ percent to DM 1.8730 in extremely disorderly conditions. In response, the Trading Desk intervened as a seller of marks and Swiss francs and, to avoid aggravating the weakness of the mark relative to the French franc within the EMS, also intervened as a seller of French francs. The Bundesbank also sold French francs to support the mark within the EMS.

In the weeks that followed, United States interest rates continued to drop precipitously, at times falling by as much as 1-2 percentage points a day. Traders generally recognized that the Federal Reserve's policy of restraint on money supply growth was consistent with some easing in financial market conditions, as demands for money and credit weakened and as evidence of recession mounted. But the abruptness of the change in market conditions generated uncertainty about the policies of the United States authorities. At the same time, German interest rates remained firm, so that interest differentials adverse to the mark were rapidly narrowing. As commercial and professional participants continued to unwind their short mark positions, the mark advanced another 4¼ percent to as high as DM 1.7940 by late April. However, the United States and German authorities were quick to enter the market to moderate the mark's rise, and their coordinated intervention helped bring the market into better balance around the month end.

Meanwhile, in Germany, inflationary pressures remained strong by recent standards, and the continued growth of credit demands was boosting borrowings from the central bank. On April 30, the Bundesbank hiked its discount rate by ½ percentage point to 7½ percent and the Lombard rate by 1 percentage point to 9½ percent. At the same time, the Bundesbank moved to curtail excessive reliance on the Lombard facility by reducing reserve requirements by 8 percent



and raising commercial banks' quotas under the rediscount facility, thereby providing about DM 8 billion in domestic liquidity. The effect of these actions was to leave the restrictive stance of monetary policy unchanged while keeping short-term liquidity tight. But market participants initially found it hard to assess the impact of these measures and focused instead on broader economic developments in the United States. Monthly data showed that the United States trade position was improving, while some evidence suggested that price increases were slowing from the rapid pace early in the year. As a result, the mark fluctuated only narrowly higher as the dollar gained some resiliency in the exchanges, to trade around DM 1.78-1.79 through mid-May.

On those occasions when upward pressures on the mark threatened to cumulate, the United States and German authorities intervened to restore balance to the market. Total intervention sales by the United States authorities between early April and mid-May amounted to \$1,370.2 million equivalent of marks, including \$732.4 million equivalent for the System, financed out of balances and by drawings on the swap line with the Bundesbank, and \$637.8 million equivalent for the Treasury financed from balances. At times when the mark eased back, the Federal Reserve took the opportunity to acquire \$60.4 million equivalent of marks in the market and \$169.6 million equivalent from correspondents in order to finance intervention and to repay part of the newly acquired swap debt with the Bundesbank. On balance, by mid-May the System's swap indebtedness with the Bundesbank stood at \$331.4 million equivalent of marks. For its part the Treasury bought \$29.8 million equivalent of marks on a spot basis and received delivery of \$400 million equivalent of marks on a forward basis from correspondents.

Nevertheless, market participants remained extremely sensitive to monetary policy developments in Germany and in other industrial countries. Coming into the summer, Bundesbank officials were stressing the need to rein in further central bank money growth to the lower end of the 5-8 percent target range. In the United States, meanwhile, interest rates continued to decline. Participants questioned whether the sharp drop in rates was more a response to the falloff in credit demand or to the provision of bank reserves by the United States authorities. Traders closely scrutinized the actions of the domestic Trading Desk, and the mark frequently came into demand when declines in the Federal funds rate were interpreted as a sign of monetary ease. Moreover, in view of the exceptional weakness of the United States economy and increasing public discussion about the need for stimulus, the exchange market was alert to any evidence of a weak-

ening in the priority of the United States fight against inflation. Consequently, bidding for the mark gathered force in late May and again in early July, when the United States authorities first relaxed and then phased out completely the special credit restraint program adopted early in the spring.

Demand for the mark propelled the spot rate to as high as DM 1.7335 by early July. But against the major European currencies the mark remained weak. Germany's current account deficit, already larger than that of any of its trading partners, continued to widen, and a number of private and official organizations were predicting a deterioration of up to as much as DM 25-30 billion for the year as a whole. Although capital continued to flow back into Germany, a number of other EMS countries with higher interest rates than those prevailing in the German money and capital markets were also attracting substantial inflows of funds. In these circumstances, the Trading Desk again countered the outbreak of disorder in the market by supplementing its mark intervention with sales of French francs so as to avoid aggravating the strains on the mark within the EMS.

By mid-July the mark began to lose some of its buoyancy as traders grew more cautious in the face of changing economic conditions in Germany. Evidence mounted that domestic economic growth was tapering off, as industrial production and construction activity posted declines. Inflation on the wholesale and consumer levels also abated somewhat, reflecting some relief in the food and energy sectors, the slowing in demand pressures, and moderate wage settlements negotiated over the spring. Moreover, several EMS countries had begun to allow monetary conditions to ease. Accordingly, domestic pressures built up for a relaxation of policy in Germany. The authorities were nevertheless concerned that a reduction of official interest rates would undercut the progress under way in bringing inflation under control and in financing the current account deficit. Instead, the Bundesbank announced that it would provide a new repurchase facility in the amount of DM 5.4 billion. Bundesbank President Poehl described this action as a cautious easing in monetary policy.

At the same time, the outlook for the dollar was improving. The dollar was benefiting from new data on production and employment which suggested that the United States economy was no longer contracting as rapidly as before. As the demand for credit picked up and the monetary aggregates recorded large increases, short-term United States interest rates rebounded. In this light, Chairman Volcker's Congressional testimony, reaffirming the Federal Reserve's commitment to a policy of monetary restraint, was particularly well re-

Table 2

**Federal Reserve System Drawings and Repayments under Reciprocal Currency Arrangements**

In millions of dollars equivalent; drawings (+) or repayments (-)

| Transactions with         | System swap commitments<br>January 1, 1980 | 1980<br>I              | 1980<br>II             | 1980<br>July         | System swap commitments<br>July 31, 1980 |
|---------------------------|--|------------------------|------------------------|----------------------|--|
| Bank of France .....      | -0-  | -0-                    | + 100.2                | + 60.6               | 166.3*                                   |
| German Federal Bank ..... | 3,150.4                                    | { + 316.0<br>- 3,489.2 | { + 996.1<br>- 132.4   | { + 265.7<br>- 263.4 | 879.7†                                   |
| Swiss National Bank ..... | -0-  | { + 22.7<br>- 22.7     | -0-                    | { + 11.2<br>- 11.2   | -0-                                      |
| Total .....               | 3,150.4                                    | { + 338.7<br>- 3,511.9 | { + 1,096.2<br>- 132.4 | { + 337.5<br>- 274.7 | 1,046.0                                  |

Because of rounding, figures do not add to totals. Data are on a value-date basis with the exception of the last two columns which include transactions executed in late July for value after the reporting period.

\* Includes revaluation adjustments from swap renewals, which totaled \$5.5 million for drawings on the Bank of France renewed during July.

† Includes revaluation adjustments from swap renewals, which totaled \$36.6 million for drawings on the German Federal Bank renewed during the first quarter and July.

Table 3

**Drawings and Repayments by Foreign Central Banks and the Bank for International Settlements under Reciprocal Currency Arrangements**

In millions of dollars; drawings (+) or repayments (-)

| Bank drawing on<br>Federal Reserve System                            | Outstanding<br>January 1, 1980 | 1980<br>I           | 1980<br>II          | 1980<br>July | Outstanding<br>July 31, 1980 |
|--|--------------------------------|---------------------|---------------------|--------------|------------------------------|
| * Bank for International Settlements<br>(against German marks) ..... | -0-                            | { + 192.0<br>- 97.0 | { + 50.0<br>- 145.0 | -0-          | -0-                          |

Data are on a value-date basis.

\* BIS drawings and repayments of dollars against European currencies other than Swiss francs to meet temporary cash requirements.

Table 4

**United States Treasury Securities, Foreign Currency Denominated**

In millions of dollars equivalent; issues (+) or redemptions (-)

| Issues                | Amount of<br>commitments<br>January 1, 1980 | 1980<br>I | 1980<br>II | 1980<br>July | Amount of<br>commitments<br>July 31, 1980 |
|-----------------------|---|-----------|------------|--------------|---|
| <b>Public series:</b> |   |           |            |              |   |
| Germany .....         | 4,065.7                                     | + 1,168.0 | -0-        | -0-          | 5,233.6                                   |
| Switzerland .....     | 1,203.0                                     | -0-       | -0-        | -0-          | 1,203.0                                   |
| Total .....           | 5,268.6                                     | + 1,168.0 | -0-        | -0-          | 6,436.6                                   |

Data are on a value-date basis. Because of rounding, figures do not add to totals.



ceived. As a result, the mark dropped lower to close the period at DM 1.7860, for a net decline of 2½ percent over the period under review.

After mid-May, the United States authorities intervened to sell \$1,919.4 million equivalent of marks including \$1,096.0 million equivalent for the System and \$823.4 million equivalent for the Treasury. The System's sales were financed from balances and by drawings on the swap line with the Bundesbank. However, the authorities were also able to purchase \$160.0 million equivalent of marks in the market and \$608.2 million equivalent from correspondents. As a result, the System was able to reduce its outstanding indebtedness to the Bundesbank from as high as \$1,080.9 million equivalent to \$879.7 million equivalent by end-July (including revaluation adjustments for swap renewals), while the Treasury was able to begin replenishing its mark balances. Meanwhile, Germany's foreign exchange reserves rose \$4.5 billion in the four months through end-July, largely reflecting revaluation gains of its gold and foreign currency holdings with the European Monetary Fund. The Bundesbank's purchases of dollars also contributed to the rise in foreign exchange reserves which stood at \$45.7 billion at end-July, little changed on balance.\*

#### Swiss franc

By early 1980, the upsurge of oil and other international raw materials prices was being quickly transmitted to the Swiss economy. Indeed, inflation in Switzerland, at 5 percent per annum, remained low by comparison with that in other countries but was accelerating at a worrisome pace. At the same time, the sharp rise in imports of oil and other goods cut deeply into Switzerland's traditional current account surplus. The Swiss authorities, like those in most other industrial countries, were pursuing a policy of monetary restraint in an effort to combat inflationary pressures, and Swiss interest rates moved higher. But economic activity in Switzerland was expanding more slowly than in other countries. Consequently, the demand for funds was not so intense, and Swiss interest rates—while rising sharply by historical standards—did not begin to keep pace with those abroad.

The shrinking current account surplus, accelerating inflation, and adverse interest differentials exerted a drag on the Swiss franc during February and March. At times when the dollar came on offer in early Febru-

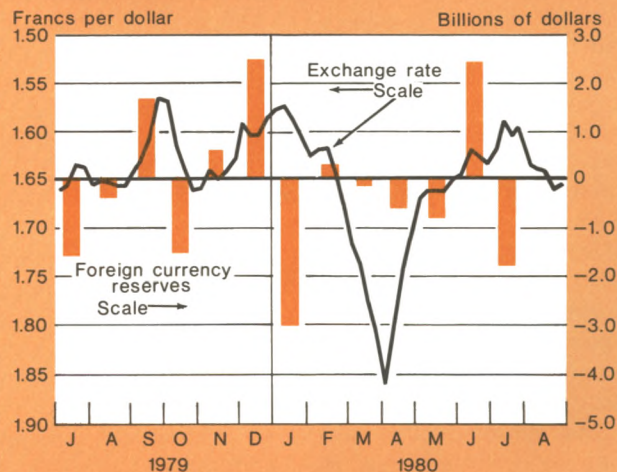
ary the Swiss franc was bid up. On such occasions, the Swiss National Bank intervened to counter a disorderly rise in the franc. At one point, the Federal Reserve joined in the intervention by selling \$22.5 million equivalent of Swiss francs out of balances. But otherwise the Swiss franc tended to ease. By late February, investors began liquidating Swiss franc-denominated assets, switching into higher yielding mark and sterling assets and, when United States interest rates began their upward climb, moving into dollar-denominated investments as well. In fact, the franc fell more sharply than the mark against the dollar, declining to SF 1.7111 in late February, some 4¾ percent below the opening level of SF 1.6325.

In response to these pressures on the franc, the Swiss authorities acted in late February and early March to liberalize restrictions on capital inflows by lifting the ban on interest payments on nonresident savings deposits and on foreign central bank deposits with maturities of six months or more. The authorities also eased restrictions on foreigners' purchases of forward Swiss francs. On February 28, the Swiss National Bank raised the discount and Lombard rates by 1 percentage point each to 3 and 4 percent, respectively. But these measures were not sufficient either to satisfy market expectations of more comprehensive action to dismantle barriers to inflows or to bring official rates in line with interest rates prevailing in the domestic or Eurofranc money markets.

Chart 4

#### Switzerland

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

\* Foreign exchange reserves for Germany and other members of the EMS, including the United Kingdom, incorporate adjustments for gold and foreign exchange swaps against European currency units (ECUs) done with the European Monetary Fund. Foreign exchange reserve numbers used in the report are drawn from International Monetary Fund data published in *International Financial Statistics*.

Meanwhile, domestic economic activity was picking up following two years of sluggish growth. With the economy now operating close to full employment, consumers and businesses accelerated their purchases of imported goods at a time when import prices were still rising rapidly. As a result, the trade deficit deteriorated further. During March selling pressures intensified. Commercial leads and lags swung against the franc, and investors kept shifting funds out of Switzerland. Moreover, higher interest rates abroad prompted professional and commercial borrowers to turn to Switzerland's money and capital markets where interest rates remained comparatively low.

In response, the Swiss National Bank began intervening more openly and heavily as a seller of dollars, thereby absorbing Swiss francs. The authorities also lifted completely restrictions on forward franc sales to foreigners and removed the interest payment ban on nonresident bank deposits of three months or longer. As a further stimulus to capital inflows, foreign central banks were allowed to subscribe to a second Swiss franc-denominated bond issued by the World Bank and to short-term certificates of the Swiss government. Even so, with interest differentials remaining highly adverse to franc-denominated assets, the franc spot rate continued to weaken, dropping through the psychologically important SF 0.95 level against the mark.

On March 27, Swiss National Bank General Manager Languetin stated that the Swiss central bank would intervene as forcefully as required to prevent a further weakening of the franc. At the same time, the authorities were alert to the domestic liquidity situation. The heavy volume of capital outflows and official dollar sales had led to a decline in the monetary base below desired levels, and a further contraction threatened to dampen economic activity. To support the franc without generating further liquidity strains, the Swiss National Bank supplemented its spot intervention with forward dollar sales and provided commercial banks with a substantial amount of franc liquidity through short-dated foreign exchange swaps. The Federal Reserve also took advantage of the opportunity to buy Swiss francs in New York to add to balances, buying \$185.1 million equivalent of Swiss francs, including \$140.4 million equivalent in the market between February and early April. Whereas the franc soon steadied against the mark, the spot rate continued to decline against the dollar, bottoming out at nearly SF 1.88 on April 8 in the Far East.

The abrupt decline of dollar exchange rates beginning early in April had its counterpart in a surge of heavy bidding for the Swiss franc. Professional and commercial interests rushed to cover short franc positions

Table 5

**Net Profits (+) and Losses (–) on United States Treasury and Federal Reserve Current Foreign Exchange Operations**

In millions of dollars

| Period   | Federal Reserve | United States Treasury      |                 |
|--|-----------------|-----------------------------|-----------------|
|  |                 | Exchange Stabilization Fund | General Account |
| First quarter 1980 . . . . .   | + 14.1          | -0-                         | + 64.9          |
| Second quarter 1980 . . . . .  | + 7.7           | + 42.0                      | -0-             |
| July 1980 . . . . .  | - 7.3           | + 3.8                       | + 6.3           |
| Valuation profits and losses on outstanding assets and liabilities as of July 31, 1980 . . . . . | + 19.2          | - 325.8                     | - 163.0         |

Data are on a value-date basis.

in response to the decline in United States interest rates that happened to coincide with reports that the Swiss National Bank might raise its interest rates in line with an expected hike of official interest rates in Germany. On April 8-10 the franc soared 7¾ percent to SF 1.7330, outpacing the rise in the mark. To counter the disorderly market conditions, the Federal Reserve sold \$35 million equivalent of francs, while operating in other currencies as well. Although the Swiss authorities left official rates unchanged, the franc frequently led the rise in the European currencies against the dollar in the weeks that followed. Many participants bid for the franc on the view that the Swiss authorities welcomed a rise in the franc. Investors, having ready access to franc investments as a result of the virtual elimination of exchange controls, reacted to the reduction of adverse interest differentials by purchasing a broad range of franc-denominated assets. Moreover, commercial and professional interests increasingly covered Swiss franc liabilities incurred over the winter months.

As the demand for Swiss securities increased, long-term yields in Switzerland declined. But the Swiss National Bank signaled its resistance to the rapid fall in interest rates by selling securities. Also, Swiss National Bank President Leutwiler reaffirmed the authorities' commitment to a restrictive monetary policy course. Traders were also heartened by new statistics, suggesting that Switzerland's inflation rate was leveling off. By contrast, the market remained concerned over the sharp decline in United States interest rates.



Many traders questioned the priority of the anti-inflation fight in the United States, particularly when in late May and again in early July the Federal Reserve successively dismantled the special credit restraint program. On both those occasions, the Swiss franc came into demand, rising to a high of SF 1.5840 by early July. To avoid an exaggerated movement in the spot rate, the Swiss National Bank intervened as a buyer of dollars in Zurich and through the agency of the Federal Reserve in the New York market. For their part, the United States authorities sold \$233.9 million equivalent of Swiss francs in the eleven weeks from mid-April, with the bulk financed from balances and \$11.2 million equivalent drawn on the System's swap line with the Swiss National Bank.

In the final weeks of July when market sentiment toward the dollar improved, the franc lost its upward momentum. Signs that the United States economy was no longer contracting as rapidly as before, and that interest rates were backing up, contrasted with evidence of some slowing of economic growth and easing in financial conditions in Western Europe. With market participants sensitive to the possibility that Swiss interest rates might also ease, the Swiss franc fell back in the exchanges to SF 1.6570 by end-July. In fact, however, Swiss interest rates held firm. When the franc came on offer after mid-July, the United States authorities took the opportunity to purchase \$42.0 million equivalent of francs in the market and \$130.5 million equivalent from correspondents. These francs were used to liquidate the System's outstanding swap debt with the Swiss National Bank and to rebuild System and Treasury balances.

For the period as a whole, the Swiss franc declined 1½ percent from end-January levels, while rising 1¼ percent against the German mark. Meanwhile, Switzerland's foreign currency reserves fluctuated from month to month in response, not only to the central bank's intervention, but also to foreign exchange swap operations undertaken for domestic monetary purposes. On balance, Switzerland's foreign exchange reserves declined \$850 million over the six months under review to stand at \$12.3 billion as of July 31.

### **Japanese yen**

Last year, the Japanese economy had made good progress in adjusting to earlier imbalances. Efforts to boost domestic demand had generated solid growth while also helping reduce Japan's previously excessive current account surplus. Export and import volumes had responded to the previous appreciation of the yen, with the effect of reducing the current account surplus. The yen rate had moved back up to around ¥220 to the dollar. But the sharp new rise in interna-

tional oil prices in 1979 and early 1980, coupled with the risk of major disruptions to oil supplies, was a serious blow to Japan which depends on imported oil for three fourths of its energy needs. Consequently, the authorities found that they had to reverse gears and adjust to a new set of problems, as inflationary pressures at the wholesale level built up drastically, as the current account was pushed into deep deficit under the weight of a sharply higher import bill, and as the yen came heavily on offer and depreciated sharply in the exchange market. In response, the Japanese authorities progressively tightened monetary and fiscal policies, primarily to contain inflationary pressures. The authorities also sought to correct the current account deficit gradually by adjustment of the real economy and, in the meantime, to finance the deficit by capital inflows. The government's budget for the 1980-81 fiscal year called for a cutback in public works spending that would permit a reduction of deficit financing. The Bank of Japan raised interest rates including a 1 percentage point increase to 7¼ percent in its discount rate on February 19. It also raised reserve requirements and kept tight reins on bank credit expansion.

Nevertheless, by February, short-term interest rates abroad, especially on dollar instruments, were rising even more sharply than the advance of Japanese money market rates. Consequently, the yen continued on offer. With the exchange rate declining, market sentiment toward the yen turned increasingly bearish so that commercial leads and lags as well as speculative outflows of funds added to the downward pressure on the yen *vis-à-vis* the dollar and other major currencies. By the month end the yen had plummeted to ¥251.75, a decline of 5½ percent from late-January levels and fully 43 percent from the high recorded in October 1978. As before, the Bank of Japan intervened to moderate the decline of the yen, supplementing its intervention in Tokyo with operations in New York through the Federal Reserve Bank of New York.

The sharp decline of the yen complicated the authorities' efforts to contain inflation. The rising cost of imports had already helped push wholesale prices up over 20 percent on a year-over-year basis. This sharp increase was feeding into the consumer price index which by then was rising at a rate of about 8 percent. The key spring wage negotiations were about to start. In these circumstances, a further weakening of the yen threatened to reinforce inflationary expectations.

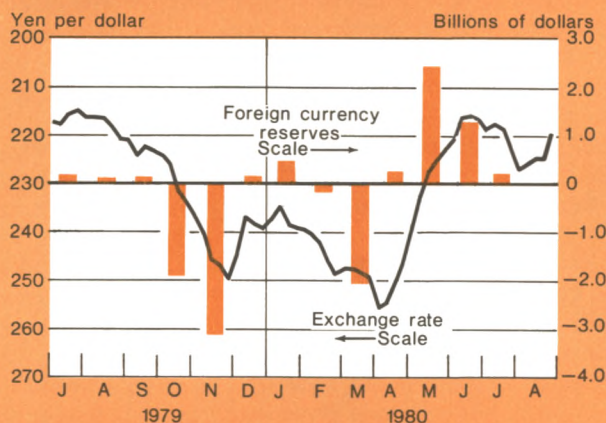
The Japanese authorities therefore undertook several initiatives to support the yen in the exchanges. Following intensive discussions, on March 2 the Bank of Japan announced that the Federal Reserve, the German Bundesbank, and the Swiss National Bank would



Chart 5

## Japan

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

cooperate to avoid an excessive decline of the yen. The Federal Reserve, for its part, indicated its willingness to purchase yen in the New York market for its own account and to provide resources to the Bank of Japan if needed under the existing \$5 billion swap arrangement. The German and Swiss central banks also pledged their support and subsequently concluded swap agreements with the Bank of Japan. Also, on March 2 the Japanese authorities adopted a number of measures to encourage inflows so as to help finance the current account deficit. Banks were allowed to bring in Euroyen deposits from their foreign offices, and Japanese banks were permitted to make medium- and long-term foreign currency loans (so-called "impact" loans) to domestic customers. Controls on private placements abroad of yen-denominated bonds by Japanese residents were relaxed. And free-yen deposits held by foreign official institutions were exempted from interest rate ceilings. Later during the month, the Bank of Japan abolished its 1970 arrangement with commercial banks providing for yen-dollar swap facilities to finance imports, thereby rescinding the last of the major import promotion schemes. The authorization of increased ceilings for the issuance of yen-denominated certificates of deposit (CDs) by banks operating in Japan also provided more scope for short-term capital inflows from abroad.

These measures were reinforced by a broad anti-inflation program, introduced on March 19, that was keyed to the domestic economy. The Bank of Japan raised its discount rate another 1¾ percentage points to 9 percent and subsequently increased both reserve requirements and "window guidance" limits on bank lending. Public works expenditures, already trimmed back, were postponed. In addition, the government announced that henceforth it would monitor price developments more closely, would sell commodities out of stockpiles if needed to prevent shortages from developing, and would accelerate energy conservation efforts. The authorities reaffirmed their commitment to a disciplined monetary policy and to the priority of the fight on inflation.

These measures helped relieve some of the immediate selling pressures, and the yen strengthened against most of the major European currencies over the course of March. But reflows back into yen were slow to materialize, particularly since the pull of United States interest rates was so strong in late March and early April. Along with other major foreign currencies, the yen continued to decline against the dollar through early April. By April 8, the yen had fallen a further 5 percent to as low as ¥ 264 against the dollar in Far Eastern trading. The Bank of Japan continued to intervene forcefully to moderate the decline of the yen rate, and its dollar sales were reflected in the \$2.2 billion decline of foreign exchange reserves during February-March. Meanwhile, as part of the March 2 agreement, the Federal Reserve bought \$216.8 million equivalent of yen in the New York market in coordinated operations with the Bank of Japan. These purchases were added to System balances.

By mid-April, with United States interest rates turning down, the yen began to recover along with other major currencies. At first the yen's recovery was tentative. Wholesale prices were still rising sharply in Japan, and concerns about oil supplies resurfaced amid discussions of economic sanctions against Iran. Nevertheless, the spring wage negotiations resulted in moderate wage increases, while evidence continued to point to substantial gains in labor productivity. The market increasingly came to the view that declining unit labor costs would mitigate domestic inflationary pressures and would provide the basis for Japanese exporters to take advantage of the now substantial depreciation of the yen to increase sales abroad. A sharp improvement in exports was already showing through in Japan's trade figures, and the overall trade and current account deficits were beginning to level off.

In response, market sentiment toward the yen improved and the spot rate began to rise more rapidly at the end of April. Speculative short positions were cov-



ered, while commercial leads and lags shifted back in favor of the yen. With United States interest rates continuing to decline and interest rates in Japan holding steady, the differential in rates swung back to favor the yen in early May and the pace of capital inflows quickened. By that time, funds were moving into yen-denominated assets of all maturities amid reports of large placements by OPEC central banks and other foreign authorities in the Japanese market. As the flow of funds gathered force, the yen began to outpace the rise in the European currencies against the dollar, soaring by mid-June to as high as ¥ 214.95, some 18½ percent above its early-April lows. As the rate rose, the Bank of Japan intervened in size to counter disorderly conditions, on balance buying back about half of the dollars it had sold earlier during the period.

By that time, the reflux of funds had about run its course. Moreover, traders had become cautious in light of the upcoming parliamentary election on June 22, especially since the sudden death of Prime Minister Ohira had inserted an added element of uncertainty into the campaign. The outcome—a victory by the ruling Liberal-Democratic Party with sufficient margin to provide for continuity in Japan's leadership—reassured the market. The yen rate settled in a trading range of ¥ 215-219 through early July.

Coming into summer, however, the debate over economic policy heated up, as the pace of economic expansion began to slow and industrial production registered a decline. With slower economic growth abroad, the authorities in several other industrial countries were beginning to allow monetary conditions to ease somewhat. Meanwhile, large inflows of interest-sensitive funds had generated an easing in the Tokyo money market. As a result, the authorities were urged to ease up on monetary policy, particularly by allowing interest rates to decline. In response to this pressure, some commercial and professional selling of yen emerged and the yen declined in mid-July.

The Japanese authorities nevertheless remained concerned about the need for further adjustment of the economy. Governor Mayekawa of the Bank of Japan stressed that an easing of monetary policy was premature in light of the continuing inflationary pressures. Moreover, the new government under Prime Minister Suzuki quickly affirmed its support for a firm anti-inflationary effort. Consequently, the yen rate soon steadied and closed the period at ¥ 227.80 for a net advance of 4¾ percent over the six-month period under review. Meanwhile, the Bank of Japan's dollar gains after March were partially reflected in an increase in Japan's foreign exchange reserves of \$4.2 billion. At the end of July, reserves stood at \$18.8 billion, up \$2.0 billion on balance.

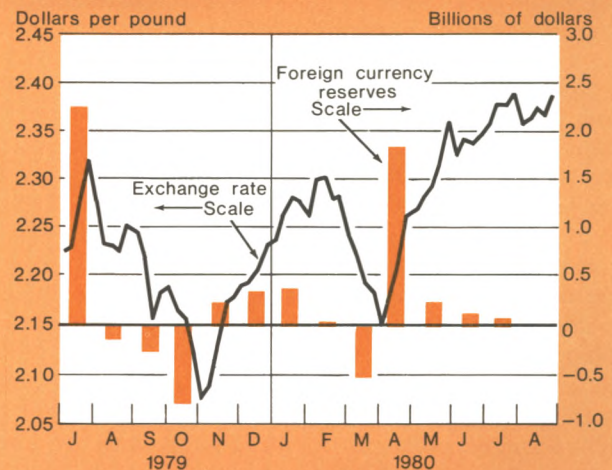
## Sterling

Last year the government under Prime Minister Margaret Thatcher came into office, pledging to reduce the role of the public sector in the British economy and to restore private incentives. To achieve this objective, the government committed itself to alleviate the burden of taxation by reducing government spending over the long term while in the meantime shifting the tax structure away from direct toward indirect taxation. Meanwhile, the United Kingdom's inflationary spiral was being given another twist by an upsurge in wage demands, following the abandonment of formal wage restraints a year earlier, rising energy prices, and a 4 percent increase in the value-added tax to finance reductions of income tax. To contain these pressures the British authorities had imposed an increasingly restrictive monetary policy, raising domestic interest rates to record highs to bring the expansion of sterling M-3, the targeted monetary aggregate, back within the 7-11 percent annual growth range. By late 1979 the economy was slipping into recession. The combined impact of rising labor costs and high interest rates was imposing increasingly severe financial strains on British industry. Companies were cutting back on their inventories and scaling down their investment plans. Even so, monetary expansion was proving difficult to control, since companies were borrowing heavily from banks to meet their financing needs while waiting for interest

Chart 6

### United Kingdom

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

rates to come down. Moreover, despite the government's best efforts, public spending was proving difficult to contain, and the public-sector borrowing requirement for fiscal 1979-80 was running nearly £1½ billion above target at just under £10 billion per annum.

In the exchange market, sterling had strengthened. British interest rates were high relative to those in most other countries. Moreover, the United Kingdom's approaching self-sufficiency in oil was seen as leaving the current account well protected against possible cutoffs in oil supplies and further increases in energy prices. The breadth and depth of British capital markets also provided attractive investment opportunities for international investors, especially OPEC members who were seeking outlets for their burgeoning surpluses. As a result, foreign capital flowed heavily into sterling-denominated assets, enabling the United Kingdom to finance in 1979 a \$5 billion current account deficit, official debt repayments of over \$2 billion, and outflows of more than \$4 billion stemming from the abolition of exchange controls. Even after these outflows, sterling traded around \$2.27 by end-January 1980 and around 71.7 on a trade-weighted basis as a percentage of the Smithsonian parities. Meanwhile, Britain's foreign exchange reserves, after increasing by over \$2 billion in 1979, stood at \$18.8 billion on January 31 of this year.

In the late winter-early spring, evidence cumulated of declining industrial output and employment. Monetary growth was also showing signs of declining. Public-sector borrowing needs were temporarily reduced by the tax-gathering season. The authorities were able to sell a large amount of government debt in the wake of the earlier measures, and external factors continued to have a contractionary influence on the money supply. At the same time, however, private-sector loan demand continued to grow strongly, with the result that the banking system was faced with a reduced supply of public-sector debt and hence of reserve assets. The authorities were thus obliged to provide temporary assistance to the money market so as to counter the upward pressures on short-term interest rates created by this drain on banking liquidity. These initiatives helped stabilize British short-term interest rates around 17 percent per annum.

Meanwhile, however, dollar interest rates were rising sharply in response to rising credit demand in the United States, with the result that in late March interest differentials moved against sterling and in favor of the dollar. As multinational corporations and international portfolio managers switched funds out of sterling into dollar-denominated assets, the pound came on offer against the dollar and the spot rate fell to as low as \$2.1285 on April 7. But, since British interest rates remained substantially above those on the European con-

tinental, sterling fell less against the dollar than the other European currencies. The turnaround in the dollar on April 8 brought sterling into renewed demand. As United States interest rates fell sharply, interest differentials moved back into sterling's favor. Therefore, the pound bounced back to \$2.2275 by mid-April.

Meanwhile, with the domestic economy clearly headed into a recession, pressures were building up within British industry for relaxation of fiscal and monetary policy. But, in a consultative paper on monetary control issued jointly by the British Treasury and the Bank of England, the authorities reaffirmed sterling M-3 as the appropriate target variable for monetary policy, emphasized that lowering the government deficit played a major role in reducing that aggregate's growth rate, and asserted that quantitative controls were not an alternative to high interest rates as a means of reducing monetary expansion. In the annual budget message, Chancellor Howe followed up by announcing that the government still intended to reduce the public-sector borrowing requirement to £8.5 billion and the growth of sterling M-3 to a 7-11 percent annual target range. Thereafter, both the Prime Minister and the Chancellor repeatedly affirmed the government's commitment to reduce inflation by containing monetary growth. In this context, British interest rates remained high even after the end of the tax-payment season, while United States interest rates continued to fall. Moreover, the recession was leading to a rapid elimination of the current account deficit. As a result, sterling led the advance of other European currencies against the dollar, soaring to as high as \$2.3770 in late May.

By early June, after prolonged negotiations, agreement had been reached to reduce by £750 million Britain's contribution to the European Community (EC). These developments generated expectations in the exchange markets of near-term reductions of British interest rates. Fearing heavy outflows of interest-sensitive funds, traders reacted initially by selling sterling. As a result, the pound came on offer during June, falling as much as 3½ percent below its late-May highs.

For their part, however, the authorities remained reluctant to cut interest rates until firmer evidence appeared of a sustained reduction of monetary growth. Unfortunately, interpreting the data was being made increasingly difficult at this time by the imminent removal of the supplementary special deposit scheme—the "corset". Inevitably, the mid-June termination of this scheme was followed by a statistical explosion in sterling M-3, as banks restored direct lending to all their customers, which had been temporarily replaced by bankers' acceptances arranged to avoid hitting the limits on the expansion of interest-bearing eligible lia-



bilities imposed earlier by the corset. Nevertheless, credit demand was still thought to be relatively strong. Moreover, despite rising unemployment, wages were still increasing at just under 20 percent per annum as the trade unions sought full compensation for price increases due to rising energy costs and higher indirect taxation. Therefore, the authorities felt unable to cut interest rates during June and, in fact, allowed a repurchase facility—introduced earlier in the year to provide liquidity—to run off. As a result, sterling moved back up to fluctuate around \$2.34 in late June.

In early July the authorities provided some interest rate relief by cutting the minimum lending rate 1 percentage point below its all-time high to 16 percent. The pound came on immediate offer but then steadied. During the rest of the month, some professionals in the market continued to look for further reductions of British interest rates. But the authorities remained cautious in light of continued strong inflationary pressures, and no further action was taken. As a result, sterling continued to be buoyed by capital inflows coming from OPEC and other international investors seeking to diversify their portfolios and to lock in high yields on British government securities. Expectations of a near-term cut in British interest rates receded, and the pound was propelled to a five-year high of \$2.3992 against the dollar on July 24. Subsequently, the rebound in United States interest rates produced a steep decline to \$2.3305 at the month end, for a net increase of 2½ percent over the six-month period. However, the pound continued to trade firmly against the other major currencies, so that it closed at 74.4 on a trade-weighted effective basis on July 31.

During the six-month period, the Bank of England intervened to smooth fluctuations in the sterling rate. These operations had a negligible impact on Britain's foreign exchange reserves. Instead, the \$1.6 billion increase over the period to \$20.4 billion mostly reflected further revaluation gains from periodic renewals of gold and dollar swaps against ECUs done with the European Monetary Fund.

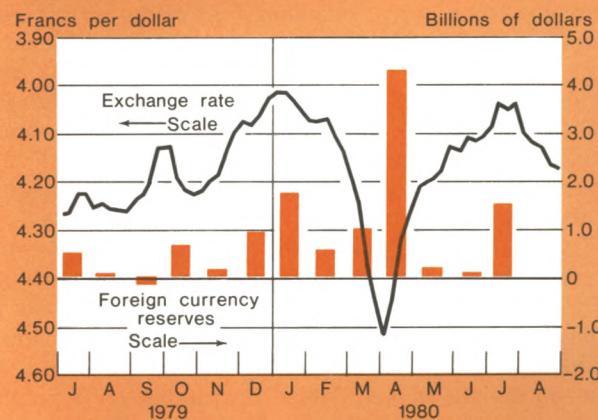
### French franc

The French economy was embarked on a sustained recovery late in 1979 when the sharp hike in imported oil costs threatened to aggravate domestic inflationary pressures, lower real incomes, and impose a sharp reversal in France's current account position. The authorities faced the prospect that the significant improvements achieved in curbing inflation, restoring the balance of payments to a surplus position, and improving the competitiveness of French industry, after years of stabilization policies, would now be seriously undercut. By early 1980, consumer prices were rising

Chart 7

### France

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

at an annual rate of more than 13 percent. Last year's \$1.2 billion current account surplus had just about disappeared. And the huge increase in France's oil import bill was expected to lead to a \$4-5 billion deficit in the current account this year. Meanwhile, a shakeout of noncompetitive French industries, together with a bulge in young entrants to the work force, had generated a rise in unemployment even as the economic recovery continued.

In response, the government had provided some fiscal stimulus on a selective basis (expanding programs to create jobs, providing additional low-cost financing to industry, and increasing low-income subsidies to offset increases in public-sector energy prices) while keeping the government's borrowing requirement at a relatively low 1.3 percent of GDP (gross domestic product). Meanwhile, France's already restrictive monetary policy was reinforced in order not to accommodate the accelerating rate of domestic inflation. The 11 percent target for monetary expansion set for 1979 was carried forward into 1980 and the system of credit ceilings was tightened. Inasmuch as a strong demand for credit was fueling a growth of the money supply well above the target rate, the Bank of France's efforts to curb this expansion generated a progressive rise in both short- and long-term interest rates.

In the exchange markets, the French franc benefited from this rise in interest rates. Moreover, France's current account deficit, though a source of con-



cern, was expected to be substantially smaller than the current payments imbalance of Germany, its principal trading partner. Also, in the context of the Iranian crisis, the traditionally good relations between France and the Middle East were expected to favor the franc in two respects. Part of the anticipated increase in OPEC's surplus would gravitate into the franc. Also, the impact of any further oil supply disruptions would be less severe for France than for most other major countries. In this atmosphere, commercial leads and lags remained favorable to the franc, and international investors steadily moved some of their funds into domestic and Eurofranc assets.

These inflows enabled the French franc to stay at the top of the EMS band throughout the early spring. Indeed, the Bank of France regularly had to intervene in European currencies to keep the franc within the obligatory EMS margins, and often it purchased dollars as well. These operations were, for the most part, reflected in the \$1.5 billion increase in France's foreign exchange reserves over the months January through March.

When the scramble for dollars developed between late February and early April, the franc fell along with the other European currencies. But the franc declined less than the mark against the dollar. Even so, it dropped some 12 percent from its opening level of FF 4.0725 to as low as FF 4.5550 on April 7. When the dollar turned around after the Easter holiday, the franc came back into heavy demand. Amid reports of large Middle Eastern demand for French francs, the rate was bid up sharply, prompting the Bank of France to intervene vigorously both in EMS currencies and in dollars. With the franc remaining at the top of a nearly fully stretched EMS and the mark at the bottom, the Federal Reserve supplemented its intervention operations in New York by selling on three occasions between April 9 and April 16 \$73.9 million equivalent of French francs. These sales were financed by drawings on the swap line with the Bank of France.

During the late spring the French economy showed signs of turning down. Domestic demand weakened, industrial output declined, and the continuing rise in unemployment was generating some pressures for more stimulative measures. Nevertheless, the money supply was still expanding slightly above the targeted rate, the current account deficit was widening, and inflation continued at a troubling double-digit pace. In late June, the French government announced it would provide some additional funds for investment by the nationalized industries into the housing sector. But the authorities were unwilling to ease their restrictive monetary stance. Instead, restrictions on the expansion of bank lending were maintained and the limits

were tightened for the second half of the year. As a result, French interest rates stayed relatively high during May and June.

Thus the franc continued to benefit from various types of capital inflows. It also was bolstered by unusually large repatriations of investment income and favorable tourism receipts. The franc therefore joined in the continued, albeit more gradual, rise of the European currencies against the dollar, moving up some 11½ percent from the early-April low to FF 4.0235 by July 8. The Bank of France continued buying modest amounts of dollars and EMS currencies. The Federal Reserve again included the French franc in its intervention operations, selling \$86.8 million equivalent on four occasions between mid-June and end-July. This intervention was financed by further drawings on the swap line with the Bank of France, raising the System's swap indebtedness with the French central bank to \$166.3 million equivalent including revaluation adjustments from renewals of earlier drawings.

During July, French interest rates eased somewhat. Nonetheless, the franc fell less than the mark when the dollar rose in late July. At this time the Federal Reserve was able to buy \$1.2 million equivalent of French francs from a correspondent to begin covering its outstanding swap debt. On July 31 the franc was trading at FF 4.1350, for a net decline of 1½ percent over the six-month period.

Meanwhile, France's foreign currency reserves continued to increase during April through July. The large rise in April and July resulted in part from the revaluation gains stemming from quarterly renewals of its swaps with the European Monetary Fund. But, in addition, the continuing purchases of dollars and EMS currencies also contributed to a rise in foreign currency reserves, which stood at \$25.3 billion at the end of July.

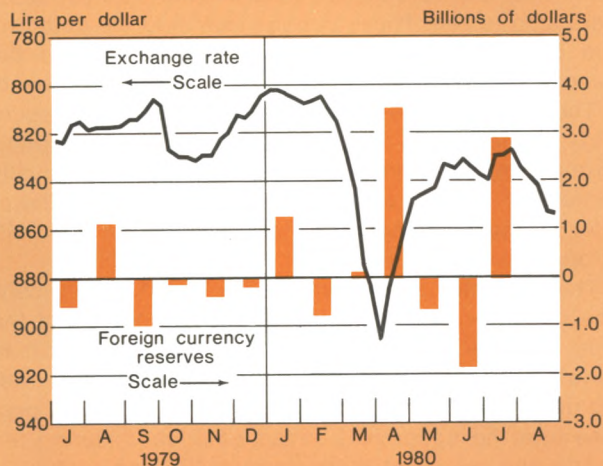
### **Italian lira**

Throughout 1979 the Italian lira had been bolstered in the exchange markets by a substantial current account surplus, together with relatively high interest rates and restrictions on domestic credit expansion that had drawn in large movements of capital from abroad. As a result, the lira had risen during the second half of the year to trade at LIT 807.50 against the dollar by end-January 1980, while also remaining in the upper half of its 6 percent band within the EMS. Meanwhile, the favorable balance-of-payments position and valuation adjustments stemming from quarterly renewals of Italy's swaps with the European Monetary Fund had generated an increase in Italy's foreign exchange reserves to \$18.5 billion even after repayment of some

Chart 8

**Italy**

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

official debt. By February, however, Italy's substantial current account surplus was rapidly disappearing. The impact of sharply higher oil prices, estimated to add \$8 billion to the overall import bill, was already beginning to weaken Italy's trade position. And the prospect that Italy could avoid a return to current account deficit with a further upsurge in its exports looked dubious, in view of the deteriorating economic outlook for Italy's principal trading partners. Moreover, the domestic economy was expanding at a brisk pace, several sectors were encountering capacity constraints, and inflationary pressures were again building up.

In response, over the course of the winter months, the Italian authorities had begun to turn to a more restrictive posture. The government raised fuel prices in line with worldwide increases in the price of oil, thereby absorbing purchasing power. But, with the 1980 fiscal budget still moderately expansive and expected to generate a LIT 40 trillion public-sector deficit, much of the burden of containing inflationary pressures continued to fall on monetary policy. Accordingly, the Bank of Italy had raised interest rates, drained domestic liquidity, and tightened the enforcement of domestic credit ceilings by requiring that banks lending above those limits maintain noninterest-bearing deposits at the central bank. With these actions producing steadily rising money market rates, Italian companies continued to satisfy their financing

needs by borrowing abroad. Thus, the Italian lira held within the top half of the EMS joint float throughout the early spring.

Against the dollar, however, the lira weakened along with other currencies after mid-February. The sharp rise in United States interest rates soon eliminated the interest differentials that had previously favored the lira. To the extent that Italian companies repaid their Eurodollar borrowings with domestic funds, they came into the market to sell lire, thereby contributing to the drop in the rate which fell as much as 13 percent to LIT 912.10 by early April. But, with Italian interest rates significantly higher than those prevailing in other EMS countries, the lira maintained its generally favorable position within the EMS. Consequently, the Bank of Italy provided little support for the lira through intervention. Indeed, Italy's foreign exchange reserves rose through end-April to \$21.5 billion, reflecting valuation adjustments in its EMS holdings.

Around mid-April the lira began to recover against the dollar as United States interest rates retreated. The lira's rise, however, lagged behind that of other EMS currencies so that, while just below the center of its 6 percent EMS band, the lira emerged as the weakest currency within that arrangement by May. Italy's current account had now fallen into clear deficit, exerting a drag on the currency's performance in the exchange market. Italy's prices and wages had continued to rise at more than 20 percent per annum without a corresponding adjustment in the exchange rate, so that the competitiveness of Italian goods was being eroded. Also, poor weather had cut into tourist revenues. Moreover, a government crisis late in March had generated some questions as to whether the authorities' anti-inflation efforts would be sustained. A new center-left coalition cabinet was soon put in place, committed to defend the lira's position in the EMS and to check inflation. But during the spring, as the cabinet sought to reach an understanding with the trade unions on ways to limit the rise in labor costs and to get the agreement of other political groups on an industrial policy that might help maintain employment, the exchange market for the lira remained nervous.

Against this background, pressures began to mount for a devaluation of the lira within the EMS to restore the competitiveness of Italian industry in world markets so as to bolster exporters' profit margins and to sustain economic growth in the face of a spreading slowdown abroad. Although government officials in their public statements stressed the argument that devaluation was not a viable alternative in a highly indexed economy, the lira came on offer as market participants continued to anticipate that a new economic package

from the government might include a devaluation. In this environment, short-term capital outflows quickly materialized. As the outflows persisted during June, the Bank of Italy entered the market in force, selling large amounts of dollars to prevent the lira from weakening further within the EMS.

In early July, the government announced new measures to bring both the economy and the exchange market into better balance. The measures included higher indirect taxes to finance a reduction of employer social security contributions, more export credits, and a reduction of the public-sector deficit. Also, the government proposed a ½ percent withholding scheme for wages and salaries, in which the proceeds would be invested in bonds redeemable in five years to finance economic development. In addition, the Bank of Italy announced a further restriction of domestic credit expansion to 13 percent per annum.

The exchange market reacted favorably to the package. With devaluation fears dissipating, funds flowed back into the lira during the balance of July, as commercial and professional participants covered short positions. The lira, therefore, traded more comfortably at the bottom of the joint float through the month end. On July 31, the lira traded at LIT 838.80, for a net decline of 3¾ percent over the six-month period. In addition, the flows of funds back into the lira, together with further valuation adjustments of EMS gold holdings produced a \$500 million increase in foreign exchange holdings, to \$22.0 billion, for a net rise of \$3.5 billion over the six-month period.

### **European Monetary System**

By the period under review, the countries whose currencies were members of the EMS's joint float were faced with the problem of having to adjust their economies to large increases in the price of oil. Most of the economies were already expanding fairly briskly, generating upward pressure on prices and wages. Consequently, for the authorities in each country the greatest concern was to prevent higher energy prices from setting off an inflationary spiral. Each country thus adopted restrictive policies both to restore external and internal balance to their economies and to fund their current account deficits. Monetary policy was the major instrument for achieving restrictiveness and interest rates remained high in the EMS countries.

Within the joint float the configuration of currencies remained relatively stable, even as the entire EMS fluctuated widely against the dollar. For the most part the French franc stayed at the top of the band, while the German mark remained near the bottom. The Netherlands guilder traded firmly near the top of the band. By contrast, the Belgian franc came under per-

sistent selling pressure between February and early April, reflecting the market's concerns over Belgium's fiscal and current account deficits and the political difficulties facing the coalition government. The National Bank of Belgium intervened forcefully to keep the franc within its 2¼ percent band. Domestic interest rates were also raised. These actions stemmed the outflows, and during the last three months of the period the franc traded comfortably within the limits of the band.

The Danish krone also came under selling pressure early in the period and required some official support through intervention. However, the krone gradually came into better balance in the early spring. Thereafter, it traded steadily in the lower half of the EMS through the end of July.

The remaining two currencies fluctuated more widely. The Italian lira fell from the top to the bottom of the joint float and required substantial official support in June before stabilizing in July. By contrast, after trading near the bottom through mid-March, the Irish punt rose into the upper half of the EMS band during the spring and remained there through the end of July.

### **Canadian dollar**

The sharp jump in international oil prices during 1979 had somewhat different consequences for Canada than for most other industrialized countries. Its untapped reserves of oil, natural gas, and other energy resources gave Canada considerable potential for increasing energy production in the future, both for use at home and for export. In the meantime, the oil price hike had little direct effect on Canada's trade account, since the country is self-sufficient in oil and gas. It did have implications, however, for the distribution of income between the oil-producing provinces of the west and the oil-consuming provinces of the east. Moreover, if oil prices in Canada were allowed to adjust more rapidly to international price levels, the escalation of energy prices would add to inflationary pressures. A proposal to that effect in the budget, which had brought about the government's defeat in December, was still under debate pending a general election in mid-February.

Canada's current account had begun to show signs of improvement. As a net exporter of raw materials, Canada benefited in 1979 from the favorable shift in terms of trade that reflected pressures in world commodities markets generally. In addition, the sharp depreciation in the Canadian dollar of previous years and the sustained efforts to curb cost and price pressures at home had substantially enhanced the international competitiveness of domestic industry. But, with much of the manufacturing sector up against capacity constraints, Canada was all the more vulner-



able to the demand and price pressures in the United States, Canada's principal trading partner. In these circumstances, economic policies continued to focus on the need to counter inflationary tendencies. Fiscal policy had been tightened in an effort to reduce the sizable budget deficit. Monetary policy was aimed at restraining the growth of the money supply while seeking an interest rate relationship between Canada and the United States that did not contribute to an acceleration of inflation through a further substantial decline in the Canadian dollar. As United States interest rates had risen, interest rates in Canada moved up and the Bank of Canada raised its discount rate in several steps to 14 percent.

By early February, Canada's rich energy resources and its improving current account performance had contributed to a generally positive sentiment toward the Canadian dollar. Also, its relatively high interest rates and North American location made Canada an attractive investment opportunity, especially at a time of growing political uncertainty and security concerns. The Canadian dollar had strengthened considerably over the preceding two and a half months to trade at Can.\$1.1574 by the beginning of the month. Then, when it was clear that the general election had provided for a majority government, the Canadian dollar came into stronger demand. Capital inflows intensified as repeated reports of new oil discoveries off the Newfoundland coast attracted foreign funds into a rising Canadian stock market. The Canadian dollar was thus propelled to Can.\$1.1419 on March 3, its highest level in nearly a year. Meanwhile, the Bank of Canada, operating to moderate the fluctuations in its currency, had purchased dollars in the exchange market. These acquisitions were reflected in the \$433 million increase in official foreign currency reserves during the month from the end-January level of \$1.9 billion.

Nevertheless, the Canadian dollar remained vulnerable to actual or anticipated shifts in capital flows. When the intense demand for credit in the United States pushed up interest rates so sharply as to raise doubts in the market whether Canadian interest rates would keep pace, the spot rate began to ease early in March. Already interest rates in the United States had risen above comparable levels in Canada, and market participants were unsure how long this unusual pattern would continue without siphoning off the inflows needed to offset Canada's current account deficit. Monetary growth in Canada had slowed considerably. Indeed, the monetary aggregates were now just within the lower end of the Bank of Canada's 5 to 9 percent target range. But inflation was still running at 9.5 percent per annum, and the authorities were concerned to avoid a substantial depreciation that might set off more

Chart 9

### Canada

Movements in exchange rate and official foreign currency reserves

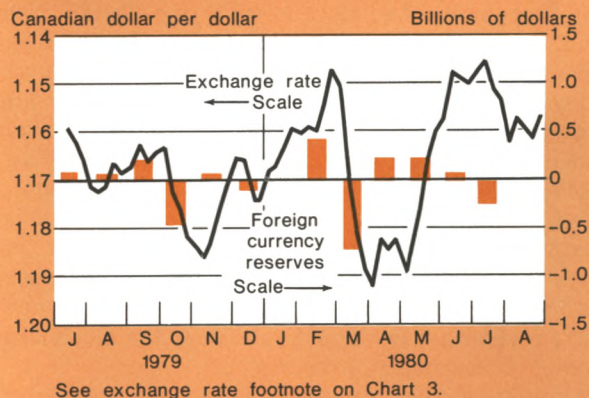
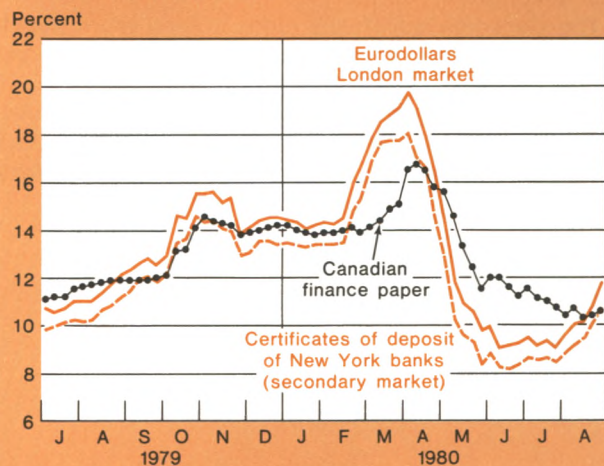


Chart 10

### Interest Rates in the United States, Canada, and the Eurodollar Market

Three-month maturities\*



\*Weekly averages of daily rates.

cost-price pressures at home. Therefore, to provide itself with more flexibility to react to rapidly changing external conditions and to avoid increases in short-term interest rates beyond those necessary to contain inflation, the Bank of Canada announced on March 10 it would set its official discount rate each week at ¼ per-

centage point above the average rate on the weekly tender of three-month Treasury bills.

Following this announcement, Canadian money market rates continued moving up, while longer rates remained close to their peaks during March. At the same time, congestion had developed in the United States bond market, leading to the postponement of several Canadian borrowings while Canadian companies were repaying dollar-denominated loans as United States interest rates continued to rise. The Canadian dollar thus came on offer. Against the United States dollar, it declined nearly 5 percent from its earlier high to Can.\$1.1983 on April 1. The Bank of Canada intervened heavily at times to cushion the decline; foreign currency reserves decreased by \$728 million during March. Even so, the decline in the Canadian dollar from early-February levels was modest, relative to the much larger drops of other major currencies.

After early April, interest differentials moved back into Canada's favor as Canadian interest rates eased more slowly than those in the United States. Although Canadian entities still did little borrowing in the United States, this traditional source of finance for Canada's current account deficit was being replaced by investment funds flowing into Canadian dollar and Euro-Canadian dollar assets. Moreover, the Canadian trade account remained in larger surplus than had been anticipated earlier in the year.

The Canadian dollar, therefore, traded more steadily during the early spring. For a time, uncertainty over the outcome of a May 20 referendum in Quebec, in which the governing Separatist Party sought authorization to negotiate with the federal government on the sovereignty issue, gave pause to the market and tem-

pered the currency's previous buoyancy. But, once the market sensed that the referendum would be defeated, the Canadian dollar began to rise again. News of further increases in the price of oil, fears of more price increases to come out of the OPEC meeting in Algiers, and reports of new energy discoveries in Canada added to the upward momentum of the rate. Also, announcements by some Canadian provinces of plans to float new issues in the New York bond market generated some professional bidding. Consequently, the Canadian dollar was bid up in steps to Can.\$1.1407 by July 7. The Bank of Canada again bought dollars to moderate the rise, thereby recouping much of the reserves it had lost during March.

During the rest of July, the Canadian dollar lost its upward momentum in the face of political tensions arising over the question of pricing Alberta oil and natural gas, growing uncertainties over the outlook for United States interest rates, and concern in the market that Canadian interest rates would ease further. As interest rates in the United States backed up and a heavy supply of new issues in the United States bond market led some of the planned Canadian issues to be postponed, the Canadian dollar dropped off along with most other currencies late in the month.

At the end of July, therefore, the Canadian dollar, at Can.\$1.1594, was down a net ¼ percent over the six-month period. During the period under review, the Bank of Canada intervened, heavily at times, on both sides of the market. In addition, the government sold small quantities of its gold holdings at market prices well above book value. Over the six-month period, total official foreign currency reserves were unchanged at \$1.9 billion.

## FEDERAL RESERVE READINGS ON INFLATION

Inflation remains one of the most bedeviling phenomena of our time. Despite being readily observed and easily measured, inflation has been relatively impervious to containment, and the consequent damage to the social, economic, and political fabric of our society is far reaching.

The Federal Reserve Bank of New York has compiled, in one volume, a selection of speeches and articles by officials and staff economists throughout the Federal Reserve System which is designed to provide a comprehensive explanation of the inflationary process, its effects and its policy implications.

This 272-page book is primarily intended as a teaching resource for college economics teachers and all interested economy watchers. It will also be of use to high-school social studies teachers.

We are pleased to offer complimentary copies of *Federal Reserve Readings on Inflation* to readers of the *Quarterly Review*. For your copy, please write to:

Public Information  
33 Liberty Street  
New York, N.Y. 10045



Subscriptions to the *Quarterly Review* are free. Multiple copies in reasonable quantities are available to selected organizations for educational purposes. Single and multiple copies for United States and for other Western Hemisphere subscribers are sent via third- and fourth-class mail, respectively. All copies for Eastern Hemisphere subscribers are airlifted to Amsterdam, from where they are forwarded via surface mail. Multiple-copy subscriptions are packaged in envelopes containing no more than ten copies each.

*Quarterly Review* subscribers also receive the Bank's Annual Report.

Library of Congress Catalog Card Number: 77-646559



**Federal Reserve Bank of New York**

33 Liberty Street

New York, N.Y. 10045

Return Postage Guaranteed