Federal Reserve Bank of New York

Quarterly Review

Autumn 1981 Volume 6 No. 3

The Quarterly Review is published by the Research and Statistics Function of the Federal Reserve Bank of New York. Among the members of the staff who contributed to this issue are EDNA E. EHRLICH *(on international diversification by United States pension funds, page 1);* DAVID C. BEEK *(on excess reserves and reserve targeting, page 15);* RONA B. STEIN *and* MARK A. WILLIS *(chart analysis of New York State's renewed strength in personal income, pages 26-27);* PATRICIA A. REVEY *(on the evolution and growth of the United States foreign exchange market, page 32).*

A semiannual report of Treasury and Federal Reserve foreign exchange operations for the period February through July 1981 begins on page 45.

International Diversification by United States Pension Funds

The investment portfolios of United States pension funds, which have been the largest single source of funds for this country's capital markets, are currently undergoing profound changes. One of these is the diversification into foreign securities in order to reduce the risk of variability of return as well as to raise the level of return. While the absolute amount going abroad is still rather small, the percentage is gradually increasing. Considering the extremely rapid rate at which the pension funds are growing, this diversification could be regarded as capable of having important domestic and international implications.

Many tens of billions of dollars are being invested by the pension funds each year. The greater part is from private pension plans, primarily those sponsored by corporations. Private pension fund assets totaled $450 billion at the end of 1980, having grown by more than 100 percent in just five years (table). A sharp improvement in the market value of equities contributed to an unusually large rise last year. But even in the absence of this development there would have been a very substantial increase. An explosion of investable resources will most probably continue throughout the decade. This will happen even after allowing for inflation. A study prepared for the Department of Labor two years ago estimated that, measured in constant (1975) dollars, the assets of private pension funds will have more than doubled between 1975 and 1985 and will have increased by another 90 percent by 1995.[1]

Close to 40 percent of the private pension fund assets at the end of 1980 was managed by the insurance companies. The remainder, over 60 percent, was handled by banks and adviser/managers. It is estimated that, of the total $450 billion, roughly $9-10 billion was invested in foreign assets. More than half of these foreign assets represented pension fund monies invested by the insurance companies, mainly in debt instruments and largely in Canadian assets, although the holdings included fixed-income securities, mostly dollar denominated, of a number of non-Canadian governments. The foreign investments by the other managers were much more diversified. Geographically, they encompassed assets in about twenty countries, predominantly in Europe and Japan, and smaller amounts in countries elsewhere. Less than one third comprised fixed-income securities (including international agency and other securities denominated in United States dollars, as well as foreign currency securities); more than two thirds consisted of equities.

In preparing this study the author had the benefit of many interviews with pension plan executives and officials of various types of intermediating financial institutions. They generally requested anonymity with regard to information provided concerning amounts, approaches, techniques, and views, but the author wishes to express her appreciation to all of them. She is also grateful for assistance received from staff members of the Department of Labor and the Securities and Exchange Commission.

[1] ICF Incorporated, *A Private Pension Forecasting Model* (October 1979). The forecast for 1985, in constant 1975 dollars, is approximately $475 billion and for 1995, almost $900 billion. The forecasts are based on a number of assumptions, including labor force demographics, economic growth rates, and price developments. As is always the possibility with long-range forecasts, some of the assumptions might turn out to be quite a bit off the mark, as the authors themselves caution.

While state and local government retirement funds total less than half as much as private pension funds, they also constitute a huge pool of investment monies. At the end of 1980 they totaled slightly over $200 billion, having not quite doubled since 1975 (table). These funds operate for the most part under rather rigid investment constraints, but modifications are being slowly introduced. Two states already have started diversifying into foreign assets, and others may eventually follow. Still, it will be many years before state and local funds could conceivably account for a significant volume of foreign investments.

Although there can be little question that, short of some cataclysmic event, private pension funds will be increasing their foreign investments during the rest of the eighties, one can only hypothesize about the pace of the outflows. A good ball-park guess might be that the share of foreign assets in total private pension fund portfolios will rise during the decade at an annual average of about ½ percentage point from the approximately 2 percent they were at the end of 1980. The dollar outflows implied by this assumption would be substantial, but they would not be so large as to have harmful effects on either domestic financial markets or the value of the dollar in foreign exchange markets.

This article examines in further detail (1) the motivations of pension plan sponsors for diversifying into foreign assets, (2) the considerations that in past years restrained the outflow, (3) the activities of financial intermediaries that have sought a role in carrying out the pension funds' international transactions, (4) the manner and quantity in which funds are being placed abroad, and (5) the possible implications for the United States balance of payments and financial markets.

Motivations for international diversification

Two goals are sought by pension plan officials who decide to broaden their portfolios to include foreign assets. The first is a reduction of the risk associated with variability of investment return. The second is an improvement in the level of return. In the private sector, failure to improve return necessitates larger corporate contributions to meet actuarial funding requirements; in the public sector, failure to improve return implies that, as pension commitments rise, larger tax appropriations are required.

Not surprisingly, the pioneers in foreign asset diversification were primarily pension funds sponsored by large corporations whose officials were already familiar to some degree with foreign economies. However, many sponsors of smaller private funds are now also involved in such diversification. Most recently, some officials responsible for public employee pension funds have begun to shed their diffidence concerning foreign asset diversification. The states of Alaska and Vermont have been leaders in passing the required laws and purchasing foreign assets, and there may be other states considering enabling legislation. However, the great majority of states still have laws that prohibit public pension funds from making foreign investments other than in Canada. Public pension funds governed by New York State law are prohibited from investing even in Canadian corporate equities, although they

Assets of Private and Public Pension Funds

In billions of dollars; year-end values*

Year	Private noninsured pension funds	Private insured pension funds†	Total private‡	State and local government retirement funds
1974	115.5	60.8	176.3	88.0
1975	146.8	72.2	219.0	104.8
1976	171.9	89.0	260.9	120.6
1977	178.5	101.5	280.0	132.6
1978	198.6	119.1	317.7	153.0
1979	222.4	139.2	361.6	170.1
1980	286.1	164.6	450.7	202.7

* Figures reflect equities at market value and other assets at book value.

† Includes noninsured "separate account" pension funds at the life insurance companies.

‡ Includes pension funds and deferred profit-sharing funds of corporations, unions, multiemployer groups, and nonprofit organizations.

Source: United States Securities and Exchange Commission.

may invest in foreign debt that is denominated in United States dollars—*i.e.,* in Eurodollar debt rated A or better or in what are called Yankee bonds (bonds issued in the United States by foreign entities). Nonetheless, there is a growing tendency to loosen the very rigid restraints that still limit most public pension fund investment activities.

A number of institutional changes in pension fund practices over the past decade that have dramatically increased pension costs have added to the incentives to seek new avenues for improving investment returns. These changes include (1) heavier weighting of later, higher earning years in calculating pension benefits, and (2) steps to adjust both workers' and retirees' incomes to compensate for increases in the cost of living. Pension fund officers have consequently come to regard pension plan liabilities increasingly as a purchasing power liability rather than as a fixed-dollar liability and thereby have been additionally stimulated to look for higher returns than those from the more traditional investments.

Enactment in September 1974 of national legislation popularly referred to as ERISA (Employee Retirement Income Security Act), which governs virtually all privately sponsored employee benefit plans, added to the interest in diversification. Previously, pension fund and other fiduciaries had been required by individual state laws to handle funds as "a prudent man" would. In addition, a number of states provided detailed guidelines regarding permissible and prohibited investments, although these were not applicable when a trust agreement governing the creation and administration of an employee benefit trust gave the trustee full investment discretion. ERISA replaced the states' comparatively simple and sometimes restrictive rules with a directive that added considerable complexity to the prudent man rule. Pension fund fiduciaries must now make investment decisions "with the care, skill, prudence and diligence . . . that a prudent man . . . familiar with such matters would use". Moreover, their prescribed duties include "diversifying the investments within portfolios so as to minimize the risk of large losses". Consequently, the national rule is not only more demanding than most of the earlier state laws but in effect insists on diversification. It has thus opened the door to investments in certain types of assets that pension fund officers had previously regarded as impermissible.

Already in the sixties, the spreading knowledge of modern portfolio theory principles had led to wide diversification of portfolios among domestic firms and industries to reduce the risk of variability of return. Increasing numbers of fiduciaries are now becoming convinced that diversification beyond United States markets would further reduce this risk. United States securities markets no longer dominate the world scene to the extent that they did: capitalization in equities markets outside the United States comprise approximately one half of the world total, and foreign bonds more than one half the outstanding total. Moreover, many foreign industrial firms have a very respectable capitalization. In addition, foreign business and interest rate cycles have generally not coincided with those in the United States. Although the world has grown more interdependent over time, this has been an erratic development and the correlations between the United States equities markets on the one side, and foreign markets on the other, remain considerably lower than the correlations of most United States industry groups with the total United States market. For this reason, sufficiently broad diversification across national boundaries is likely, over a period of time, to dampen the variability of total return. Many pension fund officials have therefore concluded that there are numerous prudent investment possibilities abroad and that these permit investments to be made that can be expected to help achieve the ERISA-mandated goal of minimization of risk.

Many pension fund executives also think international portfolio diversification provides opportunities for increasing the absolute rate of return for any given degree of risk. A large number of the most rapidly growing firms are situated outside the United States, reflecting fast expanding overseas markets and abundant overseas supplies of industrial raw materials and of labor at various skill levels. Moreover, while opinions differ, some managers believe many foreign securities markets are less "efficient" than United States markets, resulting in more opportunities for finding undervalued securities. There is, in addition, the possibility of boosting returns by moving funds around to take advantage of the different cyclical stages characterizing business conditions, equities markets, fixed-income markets, and exchange rates in the various countries. Interest was also spurred by negative attitudes toward domestic investment. The lag in United States government and industry policies in adjusting to the steep rise in energy prices, and the delay of certain United States industries in responding to foreign innovations, enabled numerous enterprises abroad to become very competitive and profitable while United States firms lost markets and ran into financial difficulties. Many pension fund executives have also been displeased with the performance of managers of domestic portfolio investments. Given such considerations, a growing number of pension fund officials have come to feel they might gain a higher return by investing part of their funds abroad.

These views have been bolstered by the favorable conclusions of a number of statistical studies, based on various hypothetical portfolios over different time periods. These studies have shown there would have been definite benefits from foreign investment, both in the level of return and the reduction of variability. The degree of benefit demonstrated varies from one study to another, depending upon the particular time span used by the author, the countries covered, and the types of investments, but the positive conclusions persist through all of them. Moreover, the development of sizable dollar exchange rate fluctuations after the end of the Bretton Woods par value system had little effect on the results. Whether measured in local currency terms or converted into dollar terms, over any substantial time interval the advantages of higher levels of overseas returns and of generally low correlations between economic fluctuations in the various foreign countries outweighed any risk from currency fluctuations.[2]

Deterrents to international diversification

Despite the many lures of international portfolio diversification, the majority of pension plan sponsors, particularly those responsible for plans of moderate and lesser size, had remained leery of foreign investments for general as well as concrete reasons until recently.

The general deterrents

Primary among the deterring general factors had been most sponsors' unfamiliarity with foreign markets. This implied complete dependence on outside advisers and managers. Such a situation could intensify sponsors' feelings of insecurity regarding the appropriateness of foreign investment and could even prompt a concern that they might be failing to meet ERISA prudential requirements. A second impediment had been the fear that foreign investments might be regarded by important sectors of the community, whether workers in the firms or others, as "un-American". Investment in a country that had been a wartime enemy can occasionally bring forth particularly strong complaints, as can investments in countries where the governments in power are considered antagonistic to, for example, racial equality or civil rights. Thirdly, there are relatively few persons in positions of responsibility who want to be first in a new area. If someone makes an unusual investment decision, and this turns out poorly or even is simply somewhat less remunerative than other investments that fall within a well-trodden path, the person responsible cannot take refuge in having done "the same as the others".

These considerations have lost force during the past half decade as international trade has increased, corporations have gone transnational, and publicity has developed regarding the growing number of pension plan sponsors and other institutional investors that are undertaking international diversification. Undoubtedly, there is also the consideration that foreign diversification has by and large proved attractive. Moreover, an increasing number of pension fund advisers and managers have been developing services and expertise to help investors choose and manage foreign financial assets and have engaged in intensive advertising of these services.

The informational problems

There are other, concrete deterrents to international investment, but in recent years these have also diminished in importance. One of the principal complaints had been that there was insufficient information about the condition of individual foreign firms. There is no equivalent on the European continent or in other foreign countries of the United States Securities and Exchange Commission (SEC), with its requirements for full and adequate disclosure of a firm's business particulars, except for British Company Law, which has similar disclosure rules. However, the swelling activity during recent years in international bank credits and bond issues, in international mergers and acquisitions, and in foreign portfolio investments has led to a gradual increase in the amount of business information available. Companies in Germany and Japan have been among the leaders, with growing numbers seeking to promote foreign interest in their securities by offering detailed briefings to securities analysts and others, even to the extent of holding meetings in this country.

Differences in accounting methods gave rise to an allied problem. For example, unlike United States accounting procedures, financial statements in most European countries traditionally conceal the full value of a firm's reserves, thus making it impossible to develop a complete picture of a firm's profit or loss situation. Another accounting problem has been the scarcity of consolidated accounts, which include a firm's subsidiaries and other affiliates. An increasing number of foreign companies, however, are now reporting on a consolidated basis. Moreover, some American analysts, rather than attempting to compare foreign balance sheets or profit and loss statements with those of American firms, now try instead to discover the factors on which major foreign market participants focus. They believe that emulation will enable them to make more successful investment recommen-

[2] A bibliography of some of the more recent studies is available upon request.

dations. At the same time, steps have been taken by groups abroad to produce information that would be more comparable and comprehensive. Federations of financial analysts have been set up within the past two or three years in France, Germany, and the United Kingdom with the explicit intention of trying to develop reporting standards that would be similar for all European business firms. How quickly this goal will be achieved remains to be seen.

The liquidity issue

Many pension fund sponsors have been concerned that foreign securities markets were not sufficiently liquid. Compared with the United States market, some markets do indeed have only a few stocks that are very actively traded. In Europe and Japan together, there may be only about one hundred issues that are extremely liquid. However, there are many stocks in which the trading is about on a par with trading in the United States in "special situation" stocks. On an overall basis, a number of markets are at least as liquid as the United States market, and in some countries, including markets as different in size as Japan and Hong Kong, the annual turnover rates, measured as a percentage of capitalization, are even higher.

Intermediaries who take a positive view toward the liquidity of foreign markets sometimes stress that, in the absence of broad and deep markets, it is intimate knowledge of the participants in the markets that is most important. Transactions can be successful if one knows who the stockholders are and works through appropriate channels.

The question of costs

Higher transaction costs have disturbed some sponsors. It has been estimated that turnover costs for a "round trip" in the market—*i.e.,* a purchase and a sale—would generally amount to about 8 percent in Europe and 6 percent in Japan, including the brokerage fees or commissions, the spreads quoted by market makers, and the government "stamp taxes" or "transaction fees". These figures contrast sharply with the 1 or 2 percent prevalent in the United States. Management fees and custodial fees are also higher abroad. Some United States managers comment that, because of the various higher costs, they have to be particularly careful in revamping a foreign portfolio. Others observe, however, that on a net return basis the higher foreign costs are not very significant, inasmuch as the yields from foreign market investments may be many percentage points greater than those from comparable-risk United States investments.

Some of the larger intermediaries deny that transaction costs are necessarily higher overseas. Unlike the current situation in the United States, most foreign markets are still on fixed-rate schedules and one cannot negotiate commissions on a trade-by-trade basis, but discounts can be obtained in certain countries. In Japan, for instance, where rates are fixed by the Ministry of Finance, a bank or other financial institution can receive up to a 20 percent discount from the fee normally charged by a securities broker. Similarly in Germany—where, as in other countries on the Continent, the brokers are usually banks—discounts of up to 25 percent can be obtained by banks, insurance companies, or other large institutions. In Australia, one can get a discount whenever there are big blocks of shares around.

Foreign withholding taxes on interest and dividend payments are, however, a cost that presents a particularly thorny question to pension fund officers. Since pension fund investments are not subject to income taxes in the United States, pension plan sponsors often do not regard it appropriate to pay withholding taxes abroad. Although not every market that is popular with United States investors imposes withholding taxes—Hong Kong and Singapore are such exceptions—bilateral tax treaties between the United States and many countries in Europe, as well as with Australia, Canada, and Japan, for example, do contain provisions for withholding taxes. The percentages vary from country to country, but are generally less for interest payments than for dividends.[3]

Exchange rate and capital transfer problems

The risk of unfavorable exchange rate developments is another reason some pension plan executives have been wary of international diversification. It would appear, however, that most of those who have overcome their hesitation feel they do not have to worry about short-term currency fluctuations since current liabilities constitute only a minor part of their total pension fund liabilities. Hence, they would never be obliged to liquidate the (relatively small) foreign portion of their

[3] Under the tax treaties, withholding taxes on dividends are usually 15 percent. In some countries, the *gross* tax initially withheld is higher than 15 percent, and the United States investor has to reclaim the excess. In a few countries (including Austria and Canada), the *net* tax is less than 15 percent. As for interest income, the United States model tax treaty calls for no withholding tax, but some countries are unwilling to go along with this. Germany, the United Kingdom, and the Netherlands do, but Belgium and Canada, for example, have a withholding tax of 15 percent, France and Japan 10 percent, and Switzerland 5 percent. There is usually no withholding tax on capital gains. A new model tax treaty has been drafted by the United States Treasury Department, but it will probably not affect tax rates for institutional investors. Some countries, it should be noted, provide the possibility of exemption from withholding taxes for certain categories of investors.

pension fund assets on short notice, when currency movements might make such a step undesirable. Regarding the medium and long term, some pension fund managers believe it is possible to forecast the direction in which a currency will move largely on the basis of fundamental economic considerations such as likely inflationary developments, the probable rate of real growth, and expectations regarding the foreign trade or current account balance. Others take the "neutral" position of making no currency assumptions since they believe (1) it is impossible to predict what the currency developments are likely to be, and (2) other factors are more important in the choice of foreign investments. In some cases, foreign currency-denominated investments are being hedged.

Another type of conversion risk is the erection of government barriers to the withdrawal at will by foreign investors of earnings or liquidation proceeds. Many of the nonindustrial countries already have regulations that impose certain explicit limits on withdrawal. Others provide for *ad hoc* administrative decisions by some government agency. Of 140 member countries of the International Monetary Fund (IMF) covered in a 1980 Fund report, only thirty-three had no restrictions of any kind on capital payments.[4] Of these, sixteen were either industrial or oil-exporting countries.

Although a country might not have restrictions on capital payments, it might have, or choose to impose, restraints on foreign capital inflows. A number of countries that hold strong attractions for foreign investors limit such investments through either legal or regulatory barriers. During the past year, however, there has been some small evidence, with actions by Mexico as one example, of a possible tendency to ease these restraints, partly in the belief that economic progress could be furthered more rapidly if foreign private capital were allowed to make more of a contribution.

The intermediaries for pension fund diversification

As pension plan sponsors began to display a growing interest in foreign portfolio investments, partly in response to suggestions by a few outside advisers, financial intermediaries of various kinds strove to position themselves to compete in this new field. These included the traditional managers of pension funds, namely, commercial banks and insurance companies, as well as the other types of investment managers that had acquired a significant share of the pension fund business beginning in the 1960s. Others sought to gain entry by showing that, unlike most United States pension fund advisers and managers who had had little experience with foreign markets and therefore were unable to produce relevant track records, they, on the contrary, had the requisite knowledge and experience. Still others found a niche for themselves by establishing services that were ancillary to the international investment management function itself.

The banks

Bank trust departments are still the principal managers of pension plan funds—and now also of a large portion of the internationally invested assets. Even the larger banks that have become active in foreign asset management had initially to intensify their knowledge in certain relevant areas, while others had to work from a much lower base to acquire expertise on foreign economies and companies, foreign securities markets and currency markets, and the relevant networks of foreign intermediaries. A few put securities analysts and investment managers on the scene in existing foreign branches. Others have gathered information on foreign firms and monitored economic developments in part through extensive visits abroad. Over time, some of the banks have established new foreign affiliates of various kinds, with one purpose being to handle the foreign investing or, as a minimum, the associated foreign research activity for the banks' United States clients. Where these foreign offices are managing the investments, they deal with foreign brokers. These are usually London or other European brokers if the manager is operating out of London or some other European city, and Japanese brokers if the manager is operating out of Tokyo or Hong Kong in connection with Asian and Australian investments. A number of banks are also providing global master custodianship services (box).

The banks have been using commingled funds especially established for foreign investments as the principal vehicle for investing those portions of clients' pension funds that have been designated for investment abroad, although a few banks also manage foreign assets for pension funds through separate accounts. In addition, some relatively small amounts are invested in foreign securities for pension fund clients who have not explicitly allocated a portion for foreign investment. This occurs when some other type of commingled fund to which some of a client's assets have been allocated (whether it be a diversified common trust fund, for example, or a growth fund or some other specialized fund) includes securities of foreign firms that fit within the framework of that particular

[4] International Monetary Fund, *Annual Report on Exchange Arrangements and Exchange Restrictions* (1980). For two additional countries, the IMF was unable to determine the situation.

Custodial Services for Pension Funds' Foreign Investments

Under ERISA's rules concerning fiduciary responsibility, the so-called indicia (evidence) of ownership of foreign assets held for employee benefit plans must be maintained in locations subject to the jurisdiction of United States district courts, except as might be otherwise authorized by the Secretary of Labor by regulation. Prior to 1977 there were many questions concerning the effect of this rule on holding indicia abroad. In that year, however, the Department of Labor, which is the agency with primary jurisdiction over employee benefit plan fiduciary responsibility, issued a regulation specifying that indicia could be held abroad if the related assets were under the management and control of a United States bank, insurance company, or investment adviser/manager registered with the Securities and Exchange Commission, providing these met certain given criteria. Otherwise, the indicia could be held abroad only if in the physical possession of a United States bank or an SEC-registered broker or dealer, or if in the custody of an entity designated by the SEC as a "satisfactory control location".

Many United States banks were not happy with the 1977 ruling since only brokers and dealers, but not banks, may appear before the SEC. Thus, for foreign locations where a bank did not have a branch that could render custodial services, the bank had to have a broker or dealer intercede with the SEC for approval of a foreign custodial agent, or else had to utilize the services of a branch of a competitor United States bank. In response to appeals from banks and the American Bankers Association, the requirements were eased effective March 30 of this year to permit United States banks to keep the indicia in the custody of a foreign bank or other specified types of foreign entities as long as the custodian is supervised or regulated by a government agency or regulatory authority in the host country.

Several United States banks are now also providing so-called global master custodianship services that further facilitate the handling of foreign investments for any given pension plan sponsor. These services are provided regardless of who the managers are. Chase Manhattan Bank is the major global master custodian for United States-based sponsors, having started this activity in the early seventies before enactment of ERISA. It has relied upon its foreign branches as subcustodians in most of the countries where it has branches and has used foreign banks in the same capacity in other countries. Citibank also has provided such services for a number of years. In the past few years there have been several additional United States entrants into the field. Some of these actually rely heavily upon another large domestic or foreign bank and its network of branches or correspondents for the custodial services required in the many locations where large corporate plan sponsors may have foreign investments. A particularly interesting recent entrant is the Mitsubishi Bank of California. Many of the clients for its global master custodianship services are regional banks that are master trustees for pension plans with rather small amounts invested overseas. To provide its global custodianship services, the Mitsubishi Bank makes use of the worldwide facilities of the Mitsubishi Bank of Japan and the latter's various financial affiliates.

The global master custodianship services offered are more comprehensive at some banks than at others, but among those generally available are safekeeping of the indicia, collection of dividends and interest, currency translation, and centralized reporting of all investments and income. Thus, no matter in how many countries the funds of a pension plan are invested, and no matter how many managers are handling portions of that plan's funds, overall responsibility for the custodial, bookkeeping, and accounting operations can be placed in the hands of a single overseer.

fund. At the end of 1980, international commingled funds amounted to 2 percent of all employee benefit commingled funds set up by banks and approximately ½ percent of the aggregate employee benefit funds managed by them as either trustee or investment managing agent.[5]

The Morgan Guaranty Trust Company pioneered in establishing an international commingled fund for ERISA accounts. It informed all ERISA clients in 1974 that, unless the client opted otherwise, a modest proportion of their pension fund reserves would be invested in foreign equities, to be built up at about 1 percent a year to around 5 percent by 1978.[6] Subse-

[5] Federal Financial Institution Examinations Council, *Trust Assets of Banks and Trust Companies—1980*. These data are compiled by the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency.

[6] Only a few clients rejected Morgan's plan, and this "strong" approach is known to have been followed by three more banks. Other banks propose foreign commingled fund investing to their clients on an "invitation" basis.

quently, the maximum allocation was raised to 10 percent, and Morgan now has one equity fund and two bond funds holding most of the assets purchased with ERISA reserves designated for foreign investments—about 6-7 percent of the total discretionary employee benefit funds under its management. Citibank, which set up its first international fund for ERISA clients in 1978, does all the foreign investing of allocated reserves through commingled funds. Currently, its international equity and bond funds total close to 3 percent of its aggregate discretionary employee benefit funds, and it is recommending to most clients that they increase their international allocation to 10 percent over the next few years.

Since the mid-1970s a number of other banks have also established international commingled funds. The smallest is the Girard Bank, which has only about $800 million of total employee benefit funds under management but nonetheless introduced an international pooled fund this May. In contrast, some banks that are among the largest holders of ERISA funds hesitated for quite some time before deciding to offer international investment services to such clients. Now they are ready to join the competition. Bankers Trust has reorganized a commingled fund that had been relatively dormant for fifteen years and is currently talking to clients about the desirability of foreign diversification. Chase Manhattan Bank has two international commingled funds starting operations, and plans to ask all of its ERISA accounts to put in 2-3 percent of their reserves. And the Bank of America has just established a commingled fund with three divisions, for investments in equities, fixed-income securities, and/or international cash. This apparently is the first international fund with a separate cash division; it will enable a pension plan sponsor to make a specific allocation for investment in highy liquid foreign assets.

At all but the very largest banks, the complexities and costs of handling foreign investments generally rule out separate accounts as opposed to commingled funds. At any institution where an account is handled separately, the client is not only charged a higher fee but is generally required to undertake a minimum foreign investment of several million dollars. The main reason for this latter rule is that prudent minimization of risk is regarded as necessitating diversification into securities in at least five different countries.

The life insurance companies

Life insurance companies rank second to banks in the volume of pension funds managed. At the end of 1980, pension fund assets accounted for 35 percent of the companies' total assets. These pension funds are handled either as part of each insurance company's "general account", where the funds are mingled with life insurance and health insurance funds, or individually as "separate accounts". Most states impose severe restrictions on general account investments, including rigorous restraints on foreign investments. New York State, for example, limits portfolio investments outside the United States to stipulated percentages of an insurance company's assets, namely, 10 percent for Canadian securities and 1 percent for all other foreign securities.[7] The rules of New York State are important even for insurance companies based in other states since they must be in "substantial compliance" with New York regulations if they wish to do any insurance business in this state. About half the states are even more restrictive than New York. Neighboring New Jersey, however, is among the less restrictive states. That state imposes no limit on investments in Canada, deemed not to be a foreign country for investment purposes, and permits investments in other foreign securities of up to 2 percent of assets, although investments in any one foreign country are not to exceed 1 percent. Ten states have no statutes at all regarding foreign investments.[8]

In many states the life insurance companies have some extra leeway for general account foreign investments by way of a catch-all investment clause, referred to in the industry as the "basket" clause, which permits a small percentage of total assets to be held in almost any way an insurance company sees fit. In New York State this "basket" amounts to 4 percent; in New Jersey it is 5 percent. Most companies prefer to utilize this leeway for domestic investments, but a few may be making use of part of it to add to foreign investments beyond the limits otherwise permitted.

"Separate accounts" were introduced in the early 1960s, when strong competition for pension fund business began to emerge from new sources, and sponsors were manifesting discontent with the returns from their traditional investments with the life insurance companies. The separate accounts have no restrictions regarding foreign or any other types of investments, although ERISA "prudent man" responsibilities hold for the management of these accounts as for other accounts.

[7] The life insurance company's assets that are used as the base for determining the indicated amounts are actually the company's "admitted assets", a term denoting assets that are in good standing. The above-mentioned permitted foreign investments are in addition to investments in any foreign country where the company is authorized to do business. The latter investments are not to exceed one and one-half times the company's reserves and other obligations in that country, or the amount it is required by law to invest in the country, whichever is greater.

[8] The author is indebted to the American Council of Life Insurance for information on the various state laws.

One insurance company—The Prudential Insurance Company of America, the largest United States life insurance company—moved more quickly than others in diversifying into foreign assets. As early as 1976 it established a commingled fund for pension and profit-sharing funds called PRIVEST, whose assets were to consist primarily of private (*i.e.* direct) placements, traditionally an important part of life insurance investments. One of the initial guidelines specified that up to 10 percent of the portfolio could be allocated to Canadian investments and up to 5 percent to other foreign investments. This year, in another move, Prudential embarked on two pilot programs of $50 million in foreign bonds and $25 million in foreign equities to test and develop its acquisition, trading, and other operations in the foreign securities markets. The company expects that by the beginning of 1982 it will be able to offer a pooled fund for foreign bonds and one for foreign equities to any pension plan sponsor wishing to diversify internationally. It also anticipates establishing an internal unit to handle foreign currency-denominated investments for its general account; such investments would, however, be constrained in size by state regulations regarding foreign investments.

Aetna Life Insurance Company has chosen a different path. In June it combined with Warburg Investment Management International, an SEC-registered British firm that already was managing a sizable volume of ERISA funds, to form a jointly owned United States subsidiary, Aetna Warburg Investment Management International. Aetna is responsible for the marketing operations and Warburg, operating out of London, for the investment and administrative activities. In this undertaking, clients' funds are being handled in separate accounts.

Other life insurance companies are already thinking of following suit via one channel or another that would enable them to provide foreign investment facilities to employee benefit funds. One is actively studying the alternative routes for entering the foreign portfolio investment area, with the expectation that a decision will be made within the coming year. Another is contemplating the introduction of foreign investment services when it considers exchange rate conditions more opportune. In at least one state where the regulations regarding foreign investments are even more restrictive than in New York, steps are being taken to try to get these changed, which would open the way for insurance companies to offer pension funds foreign investment opportunities.

Some insurance companies have been especially interested in foreign investment in Mexico. In 1979 the life insurance industry attempted to gain passage by the New York State Legislature of a bill allowing the companies to invest up to 10 percent of their general account funds in Mexican securities—as can be done with Canadian securities. When this effort failed, the approach was shifted to obtaining two statutory changes: (1) an increase in the general ceiling on foreign asset investments from the present 1 percent to 2 percent; and (2) permission for an additional 1 percent of total assets to be placed in Mexican investments. These changes came very close to passage in 1980, and their sponsors are fairly hopeful of actual passage this time around.

Investment advisers and other intermediaries

The third group of portfolio managers, those called investment advisers by the SEC, play a particularly important role in handling pension fund assets for the larger United States corporations. They are also avid contenders for the new foreign investment business. There were only a very few such managers two years ago, but a total of about forty today.[9] Current competitors include foreign as well as United States firms and also United States subsidiaries set up by foreign firms or jointly by United States and foreign firms. The recent development in this country of mergers resulting in large financial conglomerates that encompass a wide range of financial operations may make for an increasingly varied picture.

Those managers of ERISA-subject pension funds that are not United States banks or insurance companies must be registered with the SEC. While a number of foreign-based managers are registered, many do not wish to make known all the information that SEC registration requires. They avoid this by setting up special subsidiaries, usually in the United States, to deal with ERISA clients. Apparently the majority of these subsidiaries are, at most, contact points with United States clients. The actual foreign investment activity and relevant research is generally undertaken from an office located in a foreign market center.

In general, firms of foreign origin are able to display a longtime knowledge of, and experience in, foreign securities markets that puts them, in the opinion of some pension plan executives, a big step ahead of domestic managers, even those that have opened up foreign offices. A number of the foreign firms have been active for many decades rather than for just a few years—although in most cases their foreign investment operations until rather recently did not include Asian and other areas outside Europe that are now attracting considerable attention from international investors. United States managers, on the other hand, are often considered to have an advantage because of their fre-

[9] For a listing, see *Pensions and Investment Age*, "International Profile" (April 27, 1981).

quently greater familiarity with sophisticated investment tools, including modern portfolio theory and advanced statistical techniques. Moreover, for many sponsors, the ability of a management firm to show it has a well-structured decision-making process is of greater importance than the nationality or location of the firm.

Some domestic firms seek to acquire the familiarity with foreign markets and foreign securities necessary for managing foreign investments by placing staff abroad. Others rely upon the availability of increasing amounts of published information from around the world and facilities for instant global communication. Neither tactic, however, provides the track record sponsors often want to see. Hence, another approach has been to team up with an experienced foreign money manager to form a United States subsidiary. There are now a number of such joint ventures. Whatever the setup, where there are both foreign and domestic offices, the United States-based representatives generally act primarily as contact persons while the overseas personnel are the ones most directly involved in the substantive issues of portfolio diversification. As is the case with the foreign firms, overseas offices deal with foreign brokers. Although a few United States brokerage firms have established new offices abroad during the past two years, the business of these branches is more in the retail end and with foreign institutions that wish to invest in the United States rather than with United States institutional investors who are putting money into foreign assets.

A handful of firms have found a very special niche for themselves in providing advice to pension plan sponsors regarding international portfolio managers and other matters relevant to foreign diversification. Most expanded into the international field after experience of a similar kind in the domestic area. Intersec Research Corporation, however, was established in 1975 as a new firm; the first United States counselor in the international area, it also advises portfolio managers. Among the services generally rendered by these counselors are: assessment of a pension plan's objectives and needs and the appropriateness of foreign investment for that plan, analysis of the foreign investment "style" or "philosophy" of managers, monitoring the performance of managers, and recommendations regarding retention or discharge of existing managers and/or the choice of new managers.

The foreign investment services offered by the independent managers have paralleled those by banks and insurance companies with regard to handling pension funds as separate accounts or combined with other accounts, although the latter are actually mutual funds. However, in a recent development that is contributing to the ongoing blurring of lines between traditional types of financial institutions, several independent managers, as well as consultants and brokerage firms, have established or taken over state or national chartered trust banks. These will enable the firms to set up commingled funds and provide custodial services in exactly the same way banks can.

The increase in international diversification

The number of companies that have put some portion of their pension funds into foreign assets has grown dramatically during the past few years. A recent survey of almost eleven hundred of the largest American corporations found that, of those companies interviewed that ranked among the *Fortune* top 100 industrials, the number holding foreign assets had increased from 17 percent in 1977 to 34 percent in 1980; among *Fortune's* second 100, the number had grown from 7 percent to 29 percent. Interest had intensified most among firms responsible for funds with assets of over $250 million, but smaller pension funds had also become much more involved. Fully 11 percent of all the firms surveyed had some portion of their pension fund reserves in foreign assets at the end of 1980, and another 18 percent said they were planning to start investing internationally during 1981 or 1982.[10] Thus by the end of next year almost one third of the surveyed firms may have become international diversifiers.

The "style" of investment

Many of the pension plans that are prepared to place a fairly sizable amount abroad apportion the funds among more than one manager, sometimes including different types of intermediaries as well as both United States-based and foreign-based managers. If a sponsor has only one manager, which would be generally the situation for smaller investors, this would be a "global" or "international" manager, responsible for investments in many countries all over the globe, either through a commingled fund or otherwise. If there is more than one manager, there might be a global manager, and/or a "regional" manager (or managers) responsible for investments in only a part (or parts) of the world. Sometimes a sponsor may choose "specialist" managers limited to a specific type of investment such as equities or bonds, or characterized by a specific way of approaching the markets such as market "timing". Finally, some of the managers are given permission to invest part of their international allocation, when they consider it desir-

[10] Greenwich Research Associates, *Large Corporate Pensions 1981 Report to Participants*. The approximately 1,100 companies surveyed ranked among the 1,600 biggest firms in the country.

able, in dollar-denominated assets either in the United States or in the Eurodollar market. In other cases, however, the sponsor's guidelines allow dollar-denominated assets to be held only for liquidity purposes.

The sponsor also has a choice of several types of commingled funds. Some are index (passively managed) funds; others are actively managed funds. The index funds are regarded as a way to obtain widely diversified foreign assets for a relatively low management fee. They also have been utilized as a yardstick against which to measure the performance of a plan's other portfolio managers. However, the index funds are much less popular than the other international commingled funds. Among the actively managed commingled funds are a few that are limited as to type of enterprise and number of countries in which they invest, often blue-chip companies in the most advanced industrialized countries. These are sometimes characterized within knowledgeable circles as "closet index funds". Other commingled funds may emphasize growth companies or some particular type (or types) of industry or, at a given time, may even have a majority of assets in only one favored country. Still others, in contrast, choose broad diversification, either by type of firm or industrial sector or national economy, with investments in some cases being made in as many as twelve or more countries. While a few banks and other management firms offer just one international securities fund, a number offer several different funds that vary as to type of security or currency. This provides a sponsor with greater flexibility in allocation choices as well as greater ease of guideline modifications.

Once a decision has been made to diversify internationally, a pension plan sponsor may rely on new cash flows as a source of funds for such investments. At some banks, however, when a client has agreed to allocate a given portion of its reserves to an international fund, the bank simply liquidates a corresponding amount of the client's domestic holdings. Many sponsors have built up foreign investments only when economic and financial conditions seem to favor such moves, but others have kept up their planned outflows regardless of the changing international constellation of interest, exchange, and inflation rates and of capital market conditions. For them, the basic, long-term considerations that led to their original decision to commit part of their funds abroad remain the determining investment motivation. Relatively few pension plans that have invested abroad have engaged in any net reversal of such investments. This positive attitude seems likely to continue. Of the *Fortune* top 100 industrial firms already investing abroad in 1980, over 75 percent have said they expect to increase such investments during 1981-82, and roughly 60 percent of those that rank among the next 300 firms have expressed the same intention.[11]

The amounts invested

Currently, relatively few firms have more than 5 percent of their pension fund reserves invested in foreign securities, but the number is rising, and some are shooting for 10 or even 20 percent in the not too distant future.[12] Moreover, as many as one in four of the respondents to a 1980 survey said that they expected to hold between 2 percent and 5 percent at the end of that year in contrast to the one in ten that were holding such amounts twelve months earlier.[13]

One can do no better than make an educated guess regarding the total amount of foreign securities already acquired for employee benefit fund portfolios. The Department of Labor, which obtains an annual financial report from all ERISA-covered employee benefit plans, does not require that foreign investments be reported separately from domestic investments. Thus, only by going through thousands of reports, and identifying all the securities listed, could the foreign investments be sorted out, but this is not being done. Furthermore, reports on purchases and sales of foreign securities filed on United States Treasury forms and used for United States balance-of-payments statistics do not indicate which of these are transactions for pension fund accounts and often do not include transactions for such accounts that are executed by managers from overseas offices or even by United States-based managers who transmit their transaction orders directly to foreign brokers. A few pension fund consultants try to keep tabs on the amounts invested, but none of these estimates are complete.

Banks managed $229 billion of employee benefit funds at the end of 1980.[14] Approximately $1.5 billion of this total was in the international commingled funds. The banks held additional foreign assets for the employee benefit funds either because of international diversification for separate accounts or because of foreign securities the banks purchased for commingled funds that were not international funds.[15] However,

[11] Greenwich Research Associates, *op. cit.*

[12] The two state retirement funds that hold foreign assets have 5 percent as their current allocations, and at least one would not hesitate to go as high as 10 percent.

[13] *Institutional Investor* (April 1980).

[14] Federal Financial Institutions Examination Council, *op. cit.*

[15] Foreign securities purchases for "domestic" commingled accounts often are securities for which American Depositary Receipts are available, and therefore might frequently represent purchases from United States residents rather than new outflows.

these latter types of holdings apparently did not exceed $1 billion, or $2 billion at most. This would imply that roughly 1-1½ percent of the employee benefit assets with banks was invested abroad, including investments in Canada and in United States dollar-denominated foreign issues. This compared with an estimated ½ percent a year earlier, when employee benefit funds managed by banks totaled $205 billion.

Life insurance companies, which had assets totaling $479 billion at the end of 1980, were responsible for the management of $165 billion of private pension plan funds: $33 billion in separate accounts and $132 billion in the general accounts. Among the insurance companies' total assets, approximately $20 billion (4 percent) consisted of foreign securities. Debt securities, which always bulk large in life insurance company portfolios, accounted for $19 billion of the $20 billion. Most of this comprised Canadian paper (government, government agency, and corporate) and some small amount of international agency bonds, but there were also bonds of the governments of Mexico, Japan, France, Sweden, Israel, and some other countries, as well as debt of non-Canadian corporations.[16] Foreign-issued stock probably amounted to no more than $1 billion. Almost all the foreign investments were for the life insurance companies' general accounts, and only a very small part for the separate accounts. Since roughly 30 percent of the total general accounts consisted of pension fund monies, pension funds might be regarded as the source of approximately $6 billion of the foreign asset investments (compared with about $5 billion the previous year), even though the pension funds did not have the responsibility for stipulating how their funds were to be invested.

While intermediaries outside the insurance and banking communities have significant amounts of pension fund reserves under management, again only estimates are available concerning the foreign securities investments they managed at the end of 1980. One compilation suggests the total was almost $1 billion, up approximately $200 million from 1979.[17]

In summary, the foregoing estimates suggest that at the end of 1980 roughly $9-10 billion, approximately 2 percent, of private pension fund assets was held in foreign securities through all management intermediaries, including the portion of insurance company general account foreign investments allocable to pension funds. The additional foreign assets managed internally by private corporations at that time apparently totaled less than $100 million. However, some large sponsors who now have their own staffs managing domestically invested pension funds anticipate they will be able to undertake internal management of at least part of their foreign investments in another five years or so, after the staff has gained more knowledge about foreign markets and foreign securities.

As pension funds continue to increase throughout the 1980s, a net outflow would have to occur each year just to maintain an unchanged foreign investment percentage—unless the market value of the existing foreign holdings took a sudden jump. Any growth of the portion allocated to foreign assets would expand the flow further, although it is likely that the annual increase in total allocations will slacken after a number of years. Part of the rise that must be expected during the eighties will undoubtedly reflect the very recent change in attitude of a number of big banks and life insurance companies that have decided to compete in providing new foreign asset investment opportunities for ERISA clients. The same is true concerning the entrance of independent managers, brokers, and consultants into the business of trust banking. With an increasingly active and diversified group of intermediaries available as foreign asset managers and custodians, it seems likely that additional pension plan sponsors will be attracted to international diversification.

Assuming that foreign diversification grows over the rest of the decade at a rate that raises the share of foreign assets in total private pension fund portfolios by an annual average of about ½ percentage point, by 1990 foreign assets would comprise roughly 7 percent of total private pension funds, with many large funds reaching well beyond 10 percent. On the basis of the forecasts of pension fund reserves made by ICF, 7 percent in foreign asset holdings in 1990 would amount to approximately $120 billion (in current, *i.e.*, inflated, dollars).[18] This would imply that during each of the next few years the outflow would remain below $10 billion and would rise above that level only some time in the middle of the decade. The amounts would be larger if a significant number of state and local pension plans were to start investing abroad.

Implications for United States markets

What might be the implications for the United States balance of payments and financial markets as pension funds increasingly diversify into foreign assets? The foregoing estimates suggest that during the first half of the decade net outflows might expand from the approximately $2¾ billion of last year to something short

[16] American Council of Life Insurance, *1981 Life Insurance Fact Book*.

[17] Information from Intersec Research Corporation.

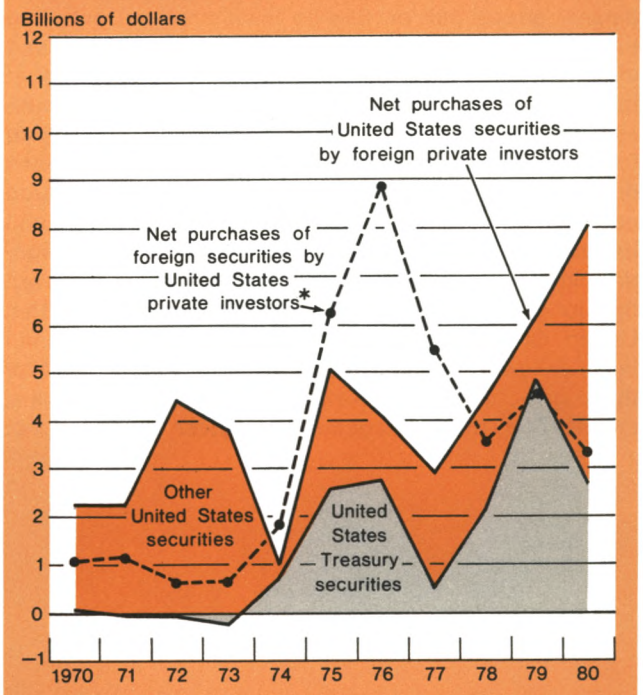
[18] The ICF "cyclelong" model on which this figure is based assumed the consumer price index would show a rise of 7 percent in 1986 and 6.5 percent in 1990. The ICF estimate of total private pension plan assets in 1990 came to approximately $1.7 trillion (ICF, *op. cit.*).

of $10 billion by the mid-1980s.[19] These are not particularly large sums when compared with other types of capital outflows. For example, during the last five years, United States banks increased their dollar claims on foreigners (excluding claims on their own foreign branches) by an annual average of almost $18 billion. And new direct foreign investments by United States residents amounted to an annual average of over $4 billion. Inclusion of reinvested earnings would increase this figure to $16 billion.[20]

A growing international orientation by United States pension funds will presumably affect to some extent the location of their short-term liquid reserves, the volume of which can fluctuate considerably. For example, since 1978, "cash and deposits" of private noninsured pension funds have accounted for 4 percent of total assets after having constituted only 2 percent for many years, and at the end of 1980 such liquid assets amounted to $9.3 billion.[21] This undoubtedly reflected the diversion of funds from long-term investments in 1978, due to the drop in bond and stock market prices and the surge in short-term interest rates. Thereafter, liquid reserves were kept at high levels presumably because of uncertainty about the outlook for capital market developments and the continuing attraction of short-term rates. In the future, at similar junctures, when short-term rates abroad are also attractive, pension fund managers may pay increased attention to the alternative foreign liquid investment possibilities (as perhaps indicated by the establishment of an international cash division in the Bank of America's new international commingled fund). A persistent trend toward greater international diversification of *short-term* investments would introduce the possibility that the management of such investments would contribute to exchange market volatility. However, these flows would be just one stream in a multitude of many fluctuating sources of supply and demand in the huge short-term financial markets.

At the same time that United States investors have begun to look abroad, the incentive to diversify and the breadth and depth of United States capital markets have led additional numbers of foreign investors to look to the United States. Indeed, throughout the past

Net Foreign Securities Purchases by Private Investors



* No data available on components of net purchases by United States private investors.

Source: United States Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, June 1981.

decade, except for a bulge in outflows during the years 1974 through 1977 resulting from the elimination of the interest equalization tax and the reemergence of the Yankee bond market, foreign private inflows into the United States securities markets were considerably greater than outflows into foreign securities markets by *all* private United States investors—pension funds, foundations and other institutions, businesses, and individuals (chart).[22] Thus, any diversion to foreign markets of pension fund resources that might otherwise have been invested in domestic capital markets has in most years been much more than offset in amount by inflows from private foreign residents. In addition, there have been considerable investments in United States private securities by foreign official agencies.

[19] It is to be noted that, even when foreign fixed-income investments are United States dollar denominated, as the bulk of the insurance company investments have been, the borrowers generally convert the funds into foreign currencies, resulting in flows through the exchange markets.

[20] Board of Governors of the Federal Reserve System, *Federal Reserve Bulletin,* and the United States Department of Commerce, *Survey of Current Business.*

[21] United States Securities and Exchange Commission, *SEC Monthly Statistical Review* (May 1981).

[22] Some penison fund outflows are not recorded in these figures, particularly, as noted above, when managers are operating out of overseas offices and/or foreign brokers are being used.

The clear-cut existence of a two-way flow of funds in an increasingly interdependent world, but one where the United States continues to exert an extraordinarily strong pull on foreign investors—not only into the securities market but also into real estate and direct investments—makes it appear improbable that the rise in investments abroad by United States pension funds (and other institutional investors) will lead to a secular downward pressure on the United States dollar. The current Administration's general attitude concerning the need to encourage investment, and its budget and tax policies, may reinforce foreigners' interest in investing in this country. Moreover, the longer term foreign investment strategies that United States pension plan sponsors have by and large followed, and the relatively low weight most of them give to short-run exchange market conditions, means that the management of these funds is not likely to be a significant source of instability in exchange markets. Indeed, the presence of more international capital flows that are governed by a longer view could actually be a source of stability.

Thus, the growing international diversification of United States pension fund portfolios seems, from the vantage point of 1981, to be a development that is capable of providing benefits for both pension plan sponsors and pension fund beneficiaries—if the sponsors are sufficiently knowledgeable to make the proper choices concerning guidelines and managers. Moreover, the expanding diversification appears unlikely to have any noticeably adverse effects on the exchange rate for the dollar or any perceptibly negative effects on United States financial markets. The outflows will not be particularly large, compared with other capital outflows, and investments in this country's markets by foreigners will probably continue to be much greater.

Edna E. Ehrlich

Excess Reserves and Reserve Targeting

In 1980 banks held on average about $275 million more reserves than required by law. Although this is a relatively small amount when measured against $42 billion of required reserves and $1,500 billion of total bank assets, the significance of excess reserves for monetary policy and money market conditions far outweighs their relative magnitude. Excess reserves arise out of the process, on the one hand, of some 15,000 banks trying to meet their weekly reserve requirements and, on the other hand, of the Federal Reserve attempting to hit its nonborrowed reserve targets. As a proportion of required reserves, excess reserves are remarkably small, especially in light of the large number of institutions simultaneously adjusting their reserve positions, the huge volume of funds shifting around the banking system, and the considerable uncertainty over float and other special factors affecting reserve availability. However, since only a limited amount of excess reserves can be carried forward, small surpluses or shortages of reserves can have disproportionate effects on the Federal funds and other short-term interest rates. Moreover, the erratic and unpredictable fluctuations in excess reserves can complicate the task of setting and achieving weekly reserve objectives. At times, the week-to-week changes in excess reserves are sizable. During the last week in March 1981, for example, banks held $462 million of excess reserves, whereas in the previous week they had realized a small deficiency.

The purpose of this article is to discuss the major factors affecting the weekly movements of excess reserves. It examines the roles of carry-over privileges, "as-of" reserve adjustments, and seasonal factors in causing these week-to-week fluctuations, and it analyzes the implications these variations have for the day-to-day management of monetary policy and the market's interpretation of Federal Reserve action. From a longer term perspective, it examines how banks' holdings of excess reserves have been influenced by the general rise in interest rates, the expansion of the Federal funds market, and the implementation of regulatory and policy changes by the Federal Reserve over the past fifteen years.

Excess reserves and interest rates

Excess reserves have much more important implications for money market conditions under the reserve strategy that the Federal Reserve adopted on October 6, 1979 than they did prior to that period. Under the new procedures, the Federal Reserve concentrates on supplying reserves, rather than on setting the Federal funds rate, to achieve its monetary goals. Consequently, factors—such as excess reserves—that in the past had the potential for influencing short-term interest rates, but were offset by the Domestic Open Market Trading Desk, could well cause large rate movements under the new approach to policy implementation and could lead to more variability in the public's demand for money.

At times the banking system may end up with a large amount of unwanted excess reserves, and banks holding these large excesses will try to sell them in the Federal funds market. Since reserves earn no interest, banks may be willing to accept very low interest rates to unload unusable excesses. Thus, relatively small surpluses can cause short-term rates to fall sharply.

At other times, a relative shortage of excess reserves may develop. For example, excess reserves

may end up at small banks, some of which do not make an effort to sell them. Although the banking system as a whole may be in good balance, some banks may not be able to buy enough funds in the Federal funds market to meet reserve requirements, even though they bid up the rate. Eventually they may have to turn to the discount window, but in the process they may push up the Federal funds rate significantly. Consequently, under current operating procedures, relatively small changes in reserve positions can produce sharp changes in money market conditions and may contribute to the variability of the money stock.

Excess reserves and reserve targeting

Although the Desk has no direct control over excess reserves, the volume of excess reserves expected for the week plays a significant role in determining the Desk's weekly open market operations. Under the current operating procedures, the Board of Governors staff and the manager of the Desk construct weekly reserve paths that are consistent with the money growth objectives established by the Federal Open Market Committee (FOMC). In constructing and revising the weekly reserve paths, the Board staff calculates required reserves that are consistent with the money growth objectives and adds on an estimate of excess reserves to obtain the total reserve path. The staff then derives a nonborrowed reserve objective by subtracting a borrowing level indicated by the FOMC. The amount of borrowing is often relatively close to the volume prevailing before the FOMC meeting, but the FOMC on occasion may also increase or reduce the level to step up or ease adjustment pressures on the banks.[1]

At times the excess reserve estimate may prove incorrect, in which case the need for discount window borrowing will be different than expected. For example, if the demand for excess reserves is underestimated, the nonborrowed reserves supplied by the Desk will generate a greater than expected need for borrowing at the discount window. This higher than expected borrowing may be reflected in a higher Federal funds rate. Conversely, an overestimate of the demand for excess reserves may produce a fall in the Federal funds rate. Although these rate movements are transitory and technical in nature, they may be misinterpreted by market participants to indicate a greater or less willingness on the part of the Federal Reserve to supply reserves.

In addition to constructing the weekly reserve paths, the Desk uses daily projections of the major market factors affecting the supply of reserves—such as float, Treasury balances, and currency in circulation. These are factors over which the Desk has no direct control. At times, these factors may differ significantly from the projected levels, in which case the supply of nonborrowed reserves available to the banking system would be temporarily different from the expected levels. If this occurs on a Wednesday, it may cause excess reserves or borrowing to be substantially different from assumed levels. At other times, borrowing from the discount window may be higher than the level assumed in constructing the path. As a result, excess reserves would be higher than estimated and money market conditions would normally be easier than expected.

Excess reserves in perspective

Before getting into a detailed discussion of weekly fluctuations in excess reserves, it is useful to put the current behavior of excess reserves into historical perspective. A variety of market, technological, and regulatory developments over the past twenty years helped banks lower their need for excess reserves. Even though the size of the banking system expanded dramatically during the last two decades, excess reserves declined significantly both in absolute terms and as a percentage of required reserves (Chart 1). In the early 1960s, excess reserves held by member banks were as high as $600 million, equivalent to over 3 percent of their reserve requirements, but then they declined to a $350-400 million level in the mid-1960s and fell sharply again in the late 1960s. Thereafter, excess reserves fluctuated mostly around the $200 million level, even as the banking system continued to expand rapidly.

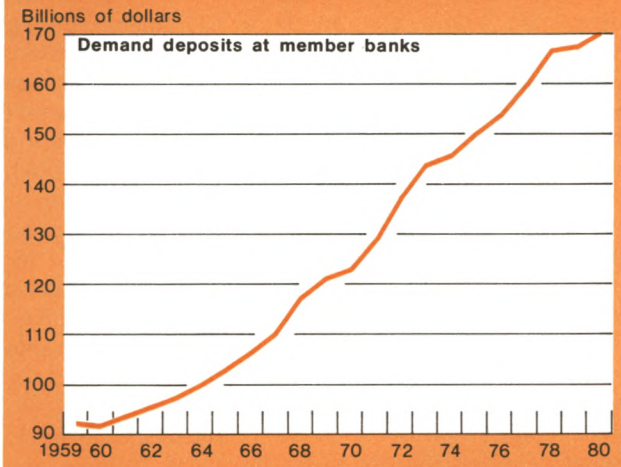
A variety of technological and structural changes over the last two decades helped the banking system reduce its need for excess reserves. Major advances were made in the data-processing and telecommunications systems, which made it easier for banks to track their reserve positions and transfer funds to other institutions. These developments also allowed many smaller banks to participate actively in the Federal funds market, either directly or indirectly through correspondents. Moreover, with the acceleration of inflation and the accompanying rise in interest rates, the opportunity cost of holding idle balances increased rapidly, encouraging banks to implement better reserve management techniques.

Regulatory changes in the late 1960s also helped reduce the need for excess reserves. In September 1968 the Federal Reserve allowed banks greater flexibility in calculating and fulfilling their reserve require-

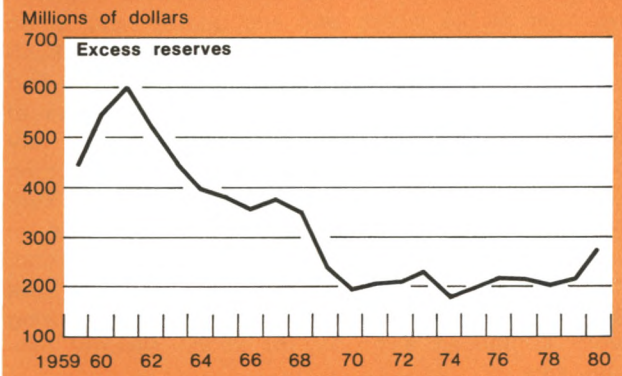
[1] For further details on this procedure, see "Monetary Policy and Open Market Operations in 1980", this *Quarterly Review* (Summer 1981), pages 61-67.

Chart 1

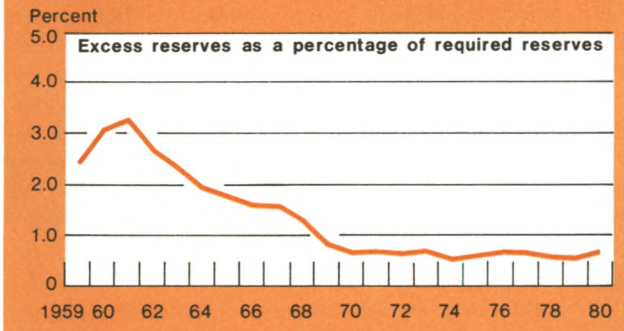
While the banking system grew substantially during the last twenty years . . .



. . . excess reserves declined sharply in the 1960s and then leveled out in the 1970s, both in dollar terms . . .



. . . and as a percentage of required reserves.



Source: Board of Governors of the Federal Reserve System.

ments by switching from contemporaneous to lagged reserve accounting and by liberalizing the reserve carry-over privilege. After 1968, banks were required to base their calculations of required reserves on their reservable liabilities held two weeks earlier. Vault cash was also lagged two weeks; that is, reserve requirements in the current maintenance period could be satisfied by vault cash held two weeks earlier. At the same time, banks were allowed to carry forward one week a part or all of their current period's reserve surplus or deficit. However, the portion carried forward could not exceed 2 percent of their required reserves, and banks could not run deficits two weeks in a row without incurring a penalty.[2] Also, any surplus not used in the subsequent week was lost.

These changes made it easier for banks to manage their reserve positions and to reduce their excess reserves. From the viewpoint of a bank's money desk manager, the new rules provided clear advantages. Liberalization of the carry-over privilege allowed banks to make good use of excesses in the previous week. Moreover, with lagged reserve accounting, banks knew well in advance what their reserve requirements would be. The lagging of vault cash also eliminated last-minute changes in maintained reserves as a result of unexpected inflows or outflows of cash. While other factors were also at work to reduce excess reserves, the September 1968 regulatory changes accounted for a major portion of the decline, according to our statistical analysis.[3] Unfortunately, it was not possible to isolate the impact of the change in accounting rules from the effect of the liberalization of the carry-over privilege, since both occurred simultaneously.

Recent movements in excess reserves

After fluctuating mostly around the $200 million level in the 1970s, it appeared that excess reserves might settle more or less permanently at this level. But excess reserves then increased by about $33 mil-

[2] Before September 1968, member banks could make up reserve deficiencies in the following period of up to 2 percent of required reserves, but there was no carry-over privilege for surplus reserves. Also, before 1968, the reserve maintenance period was synchronous with the computation period. But in effect there was a one-day lag, because daily reserves were measured at the close of business while daily deposits were measured at the opening of business. There was, in effect, a one-day lagged accounting of vault cash as well. The maintenance period also varied by size of bank—one week for reserve city banks and two weeks for country banks.

[3] Regression analysis was used to estimate the impact of the 1968 regulatory changes. According to the results, excess reserves fell about $120 million after September 1968. Other explanatory variables used in the equation included dummy variables representing the October 1979 change in operating procedures, the November 1980 implementation of the Monetary Control Act, and a time trend reflecting technological and market developments. Monthly data for the 1959-80 period were employed.

lion, according to our estimates, after the Federal Reserve switched operating procedures in October 1979 (box). Under the new strategy, banks could no longer count on the Federal Reserve to supply reserves necessary to maintain a given funds rate, and this in turn appears to have prompted some banks at least to be more cautious in the way they manage their reserve positions by holding more excess reserves on average.

Excess reserves also increased dramatically following the implementation of the Monetary Control Act in November 1980. Immediately after implementation, excess reserves averaged $600 million, substantially above the $250 million level prevailing in early 1980. But in subsequent months excess reserves returned to more normal levels. Since the number of institutions required to maintain reserves was greatly expanded by the new law, it appears that the large jump in excess reserves reported in late 1980 and early 1981 might have resulted from unfamiliarity with the new reporting requirements, especially among the smaller institutions.[4]

Weekly fluctuations of excess reserves

While the average level of excess reserves declined substantially over the last twenty years, the weekly variability remained high. In 1980, for example, the average level of excess reserves for all banks was only $275 million, but the average week-to-week variation was more than $260 million. A large portion of these weekly variations is attributable to certain technical factors, particularly seasonal patterns, carry-over privileges, and as-of adjustments. In addition, other short-term demand and supply factors may also contribute at times to the variability of weekly excess reserve numbers.

"Seasonal" factors

Excess reserves do not exhibit sustained swings in levels for several weeks or months at a time. Rather, the "seasonal" pattern (or, perhaps more accurately, the calendar pattern) generally consists of one-week increases in excess reserves, reflecting mostly quarterly statement dates, month-end dates, social security payment dates, and bank holidays. These one-week spurts are relevant only when analyzing weekly figures, as they are normally washed out in the monthly data. Total and required reserves, on the other hand, do exhibit more sustained swings, reflecting patterns in deposits and other reservable liabilities.

[4] Statistical analysis on a disaggregated basis indicates that most of this large increase occurred at banks outside New York City.

Statistical analysis of weekly data during the past several years indicates that, as a rule of thumb, banks step up their excess reserve balances by about $85 million, on average, during weeks containing the last day of the month and an extra $90 million during weeks containing the end of the quarter. In addition, banks hold approximately $42 million more excess reserves during weeks that social security benefit checks are mailed and $133 million more during weeks containing a nationwide bank holiday (box). The impact of individual dates is varied, however. The increases associated with the end of the second and fourth quarters are usually larger than those for the first and third quarters, for example. This is partly because the Fourth of July and the Christmas-New Year holidays frequently fall during the same weeks as the ends of the second and fourth quarters, respectively.

The main reasons for these calendar increases in excess reserves appear to be the larger volume and greater variability of funds flowing into and out of the banking system during these weeks than at other times. This would be especially true during weeks when social security checks are mailed to beneficiaries and at the month end and quarter end, when there are frequently large flows into and out of business checking accounts. Banks also reportedly find it more difficult to predict inflows and outflows of funds during weeks containing a holiday. Banks vary somewhat in their reaction to these calendar factors. For example, unlike the other banks, the New York banks show no statistically significant increase in average holdings of excess reserves at the quarter end. However, like the other banks, the large New York banks show a similar jump in excess reserves during weeks containing a holiday or social security payment date.

Reserve carry-over

While calendar factors induce banks to hold more excess reserves during certain weeks of the year, reserve carry-overs encourage banks to adjust their surplus reserves with a view toward their previous and succeeding weeks' reserve positions. The carry-over provision gives banks some leeway in meeting their reserve requirements by allowing the banks to carry forward their reserve surpluses or deficiencies up to a maximum of 2 percent of their required reserves.

An examination of recent data indicates that banks make wide and frequent use of the carry-over privilege. In 1980, banks carried forward, on average, about $230 million of gross excesses from the previous week and $130 million of gross deficiencies. In

Factors Affecting Weekly Variations of Excess Reserves: A Statistical Analysis

Regression analysis was used to estimate the impact of certain technical factors on week-to-week fluctuations of excess reserves. Reserve carry-overs, quarterly statement dates, month-end dates, social security payment dates, and bank holidays accounted for a large portion of the weekly changes. In addition, the October 1979 change in Federal Reserve operating procedures toward placing more emphasis on the supply of bank reserves caused excess reserves to increase somewhat. Moreover, immediately following the November 1980 implementation of the Monetary Control Act, banks sharply increased their holdings of excess reserves, but in subsequent weeks they gradually trimmed back on their excess balances as they became more familiar with the new requirements. Demand factors such as interest rates and activity levels appeared to have little predictive value on a week-to-week basis.

The regression results were as follows:

$$\begin{aligned}\text{Excess reserves} = {} & 206.9 \underset{(22.8)}{} - 0.55 \underset{(-8.0)}{\text{ carry-over}} + 89.7 \underset{(4.4)}{\text{ quarter end}} + 84.8 \underset{(5.4)}{\text{ month end}} \\ & + 41.6 \underset{(2.9)}{\text{ social security}} + 132.6 \underset{(10.0)}{\text{ holiday}} \\ & + 33.1 \underset{(2.6)}{\text{ October 1979}} + 223.2 \underset{(6.6)}{\text{ November 1980}} - 11.4 \underset{(-6.7)}{\text{ post-November 1980}}\end{aligned}$$

Sample period: July 1, 1970 to July 1, 1981 (weekly).

Summary statistics: $DW = 1.97$; $\bar{R}^2 = 0.44$; $SEE = 116.3$; Figures in parentheses are t-values.

Variables:

Excess reserves	Excess reserves in millions of dollars.
Carry-over	Net reserve carry-over in millions of dollars.
Quarter end	Dummy variable with 1's for weeks containing the last day of the quarter and 0's elsewhere.
Month end	Dummy variable with 1's for weeks containing the last day of the month and 0's elsewhere.
Social security	Dummy variable with 1's for weeks containing the social security benefit payment dates (generally the third day of the month) and 0's elsewhere.
Holiday	Dummy variable with 1's for weeks containing bank holidays and 0's elsewhere.
October 1979	Dummy variable to represent Federal Reserve procedural change from targeting the Federal funds rate to targeting bank reserves, with 1's for weeks after October 6, 1979 and 0's elsewhere.
November 1980	Dummy variable to represent implementation of the Monetary Control Act, with 1's for weeks ended after November 12, 1980 and 0's elsewhere.
Post-November 1980	Trend variable for the November 20-July 1 subperiod, to represent banks' gradual adjustment to the new requirements of the Monetary Control Act.

1980, net carry-over frequently approached the $200 million level. Large banks, in particular, made extensive use of the carry-over privilege to manage their reserve positions over several weeks rather than in a single week.

The carry-over privilege contributes to the variability of excess reserves by encouraging banks to "overadjust" their current reserve positions in order to take full advantage of reserves carried over from the previous period. As can be seen in Chart 2, both reserve carry-over and excess reserves exhibit strong sawtooth patterns, that is, they move in fairly regular up-down patterns around their average levels. The sawtooth patterns of excess and carry-over reserves are directly related to each other. A large excess in the current week normally results in a large positive carry-over and a small surplus (or even a deficit occasionally) in the following period. This, in turn, induces the opposite reaction in the succeeding week. Moreover, since banks lose the advantage of any carry-over not utilized in the succeeding period, they are likely to overadjust their current positions to ensure against any such loss, accentuating the oscillations.[5] Our re-

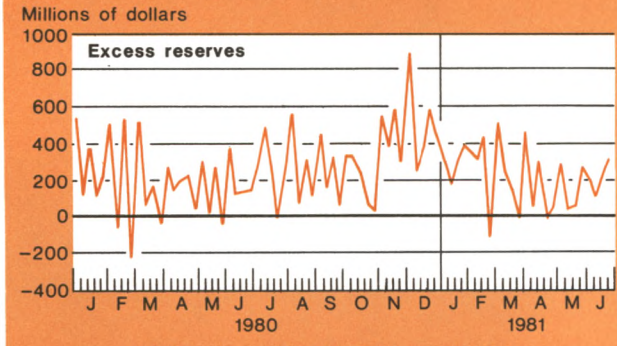
[5] For example, if a bank's surplus carry-over into the current week is $5 million, it is likely to aim for a deficit in the current period of at least $5 million, so as not to lose any benefit of the carry-over. Any uncovered deficiency in the current period would, in turn, be carried over to the succeeding week.

gression results in the box indicate that, for the banking system as a whole, excess reserves move in the opposite direction from carry-over by a multiple of 0.55. In other words, if reserves carried over into the current period increased by $100 million, excess reserves would normally be $55 million lower than otherwise, and *vice versa.*

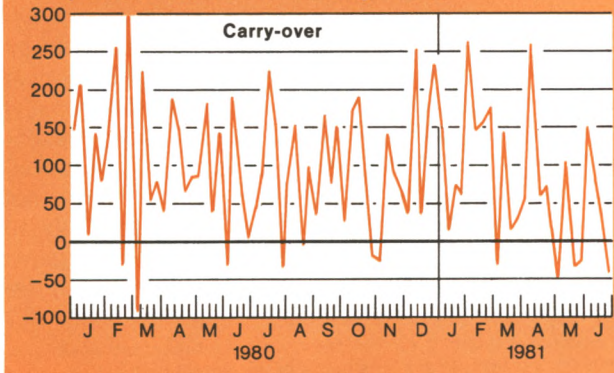
In most weeks, excess reserves fluctuate between zero and $400 million but, on occasion, the variations are substantially larger. The size of the oscillations depends partly on whether the major banks collectively are in deficit or in surplus. If they are all in similar positions, the oscillations can be as large as $800 million from a peak to a trough. If, on the other hand, major banks are on opposite sides of the fence, the fluctuations for the banking system as a whole can be much smaller.

Chart 2

Banks are allowed to carry forward one week reserve excesses or deficits up to 2 percent of their required reserves. Since they lose the advantage of any carry-over not utilized in the succeeding period, they are likely to "overadjust" their weekly reserve positions to assure against such loss. As a result, weekly excess reserves exhibit a strong sawtooth pattern . . .



. . . which is reflected in a similar pattern for reserve carry-over.



Source: Board of Governors of the Federal Reserve System.

The oscillations may be initiated by a number of different factors. They may begin with a sharp unexpected jump in bank borrowing, which increases total reserves in relation to required reserves. At the time they borrow, banks often do not perceive that reserves will be plentiful for the week on average. At other times, banks may position themselves to take advantage of reserve carry-over or expected rate movements by holding larger than average excesses in the current week. On other occasions, operational difficulties or large last-minute inflows may cause banks to wind up with more reserves than desired.

The carry-over privilege, while causing excess reserves to oscillate, does not significantly affect the implementation of monetary policy. Since the amount carried over into the current period is known at the beginning of the week, it can be offset by the Desk. (There may be some uncertainty, however, as to how much of the carry-over will actually be utilized by the banks.) Moreover, reserve carry-over serves a useful purpose by acting as a moderating influence on the money market. Without carry-over, a shock to reserves would have to be absorbed in the current week, either by banks holding larger than desired excesses or by banks borrowing more than expected from the discount window. As a consequence, it is likely that without carry-over the Federal funds rate (and bank borrowing from the discount window) would fluctuate more from week to week than they do currently.

"As-of" adjustments

At times, errors or disruptions occur in the process of transferring funds or securities to or from the Federal Reserve. Frequently, they will result from transpositional mistakes or breakdowns in the telecommunications or data-processing systems. They include entries posted to the wrong reserve accounts, delays in posting entries, and erroneous instructions by depository institutions. To rectify these errors, bookkeeping corrections called as-of adjustments are made to the affected banks' reserve positions at the various Federal Reserve Banks. If the error is discovered in the week in which it occurs, the current week's reserve position can generally be corrected. However, if the error is discovered in a subsequent period, a problem arises as to whether to make the adjustment to the current or a previous week's reserve position.

There are three types of as-of adjustments: ASOAs,

ASOBs, and ASOCs. ASOAs are corrections made to banks' reserve positions in the current or subsequent week, while ASOBs are adjustments made to banks' positions in the previous week, and ASOCs are corrections made to banks' reserve positions in statement periods prior to the previous week. For example, suppose that July 16-22 is the current reserve maintenance week; then, ASOAs would be made to the July 16-22 or July 23-29 week, ASOBs to the July 9-15 week, and ASOCs to the July 2-8 and other prior weeks.

The as-of adjustments are applied to previous, current, or subsequent weeks according to guidelines laid down by the Reserve Banks. According to the New York Federal Reserve Bank's rules, for example,[6] positive as-of adjustments issued during the current period but involving the two prior reserve periods are normally applied first to reduce penalty deficiencies (that is, deficiencies that exceed the allowable 2 percent carry-over limit and are subject to a penalty rate) in the two prior weeks (as ASOBs and ASOCs); any unused portions of the reserve adjustments are then applied to the current or subsequent period (as ASOAs). Similarly, negative as-of adjustments involving the two prior periods generally are first applied as ASOBs and ASOCs to reduce unusable surpluses (that is, excesses that exceed the maximum 2 percent carry-over limit) in the two previous periods, and the remaining portions are applied as ASOAs to the current or subsequent period. As-of adjustments issued in and involving the current period are applied as ASOAs in either the current or following period.[7]

As a consequence, banks seldom lose and frequently gain from as-of adjustments. ASOBs and ASOCs will almost always improve but will seldom worsen a bank's past reserve position, while ASOAs can usually be offset by buying or selling funds in the Federal funds market. Because banks acquire unusable excesses more often than they incur penalty deficiencies, excess reserve data are almost always revised downward. In 1980, excess reserves were revised downward as a result of as-of adjustments by an average weekly amount of nearly $60 million, equivalent to about 20 percent of total excess reserves. In many weeks the revisions resulting from as-of adjustments were substantially larger than these averages; frequently, they were $100 million and sometimes they were over $400 million.[8]

For the most part, this flexible policy regarding the application of as-of adjustments is equitable, for without such latitude a bank might be unfairly penalized if it were required to apply the full as-of adjustment to the week in which it occurred, especially if the bank had offset the mistake by maintaining more or less reserves than it would have otherwise. On the other hand, this policy reduces the effective costs of maintaining too little or too much reserves for many banks. The reason is that there is a fairly good chance for these banks to benefit from an as-of adjustment which will either reduce a past deficiency that was subject to a penalty rate or allow use of a past surplus that was ineligible for carry-over.

Economic and other factors

Economic as well as technical factors will affect banks' management of excess reserves. On the demand side, the level of interest rates determines the opportunity cost of holding unnecessary balances. As rates rise, banks will be induced to conserve on idle funds, although such adjustment may take place over a period of time rather than immediately. Banks may also increase their holdings of excess reserves during times of uncertainty and instability in the money markets. Moreover, since banks can carry forward a portion of their reserve excess or deficit, they are likely to adjust their current holdings of excess reserves in line with their view of future interest rate

[6] Although the requirements vary somewhat among the District Banks to reflect different needs and conditions, the New York Federal Reserve Bank's guidelines summarized here are fairly similar to those of the other Reserve Banks. A more detailed description of this Bank's guidelines is available from the Federal Reserve Bank of New York.

[7] Under the New York Federal Reserve Bank's guidelines, ASOAs are routinely applied to the current period if they are received by the Accounting Department by Tuesday; otherwise, they are applied to the *following* reserve period unless requested otherwise by the depository institution.

[8] As-of adjustments arising from accounting or administrative errors or delays in processing transactions by Federal Reserve offices are based on the principle that banks should neither gain nor lose as a result of such errors. In practice, however, it is easier to demonstrate when a bank has lost than when it has benefited from an error or delay affecting a prior period. Consequently, in such circumstances, the Federal Reserve Banks usually give banks the benefit of the doubt by applying as-of adjustments in the manner described.

The Federal Reserve Banks also consider requests from banks for reserve adjustments for errors made by the banks themselves. These errors may be similar to those made by the Federal Reserve; for example, a bank may transfer funds to the wrong bank. However, before acting on such a request, the Federal Reserve Bank will first satisfy itself that the institutions involved are not attempting to manage their reserve positions after the fact and it will normally apply both sides of the adjustment simultaneously (a credit for the one institution and a debit for the other). The Federal Reserve Banks make these adjustments out of a sense of equity and as a service to the institutions since the Reserve Banks, as banks of account, are usually in the best position to correct the reserve impact of such errors. A Federal Reserve Bank may decline requests where corrections are equally feasible on the part of the banks, and it may also discourage repeated requests in the interest of encouraging an institution to correct shortcomings in its own internal procedures.

movements. If they expect rates to go down, they will likely run deficits in the current period and make up the deficiencies at a later time when rates are expected to be lower.

At times, banks may miscalculate aggregate reserve availability and money market conditions and position themselves incorrectly for the settlement day by borrowing more than needed early in the week; then, if the Desk provides reserves in accordance with its nonborrowed reserve objective, too many reserves will result. Part of the adjustment will then normally occur in lower borrowings later in the week and the remainder in larger holdings of excess reserves.[9] Typically, such an "oversupply" of reserves shows up late on Wednesday with a substantial easing of the Federal funds rate. Analysis of weekly data over the last several years indicates that a 1 percentage point drop in the late Wednesday Federal funds rate below the weekly effective rate is associated with a $15 million increase in the week's excess reserves over the prevailing average level.

Finally, operational difficulties may prevent banks at times from achieving the minimal level of excess reserves desired. Common problems include breakdowns of data-processing and communications systems or unexpected inflows and late payments by correspondent banks on settlement day.

Policy implications

This analysis raises some issues regarding current practices, procedures, and regulations affecting excess reserves. The use of as-of adjustments is especially relevant, for, although as-of adjustments are relatively small compared with total reserves, they are sizable when compared with excess reserves. Critics argue that the Federal Reserve Banks' policies or applying reserve adjustments to previous weeks only to the extent that they reduce past penalties or unusable surpluses substantially reduce the risks and costs to banks for not tightly managing their reserve positions and weaken the Desk's control over reserves by allowing banks to adjust their reserve positions after the fact. The Federal Reserve could close this gap in the Desk's control by requiring that all as-of adjustments be applied to the current or future period regardless of when they occurred. However, such a policy change would raise questions of equity, especially if the banks are penalized for errors for which they are not responsible.

[9] At times, though, the Desk will take into account this "overborrowing" and permit nonborrowed reserves to fall short of the path.

Summary

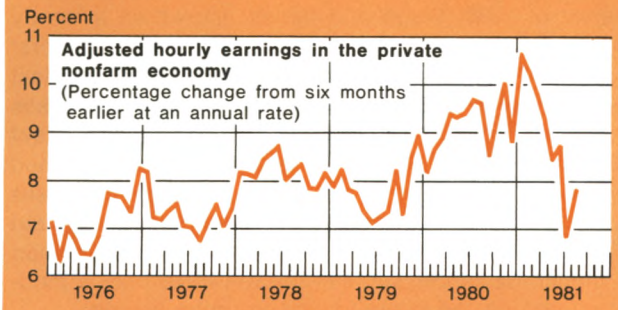
Banks substantially reduced their holdings of excess reserves between the early 1960s and late 1970s but then increased them on two major occasions during the last two years. Structural and technological innovations in the money market, regulatory and procedural changes by the Federal Reserve, and a general rise in interest rates contributed to these long-run changes. While the average level of excess reserves is fairly low, the current holdings of excess reserves fluctuate sharply on a week-to-week basis. To a large extent, these weekly variations can be explained by such factors as carry-over privileges, as-of adjustments, and calendar patterns. But a part of these weekly fluctuations is erratic and unpredictable and complicates the task of setting and achieving weekly reserve objectives. In the face of the weekly variations in excess reserves, reserve carry-over acts as a moderating influence on money market conditions; however, relatively small changes in excess reserves can nonetheless produce comparatively large movements in short-term rates, especially on Wednesdays, and may contribute to the variability of the money stock.

David C. Beek

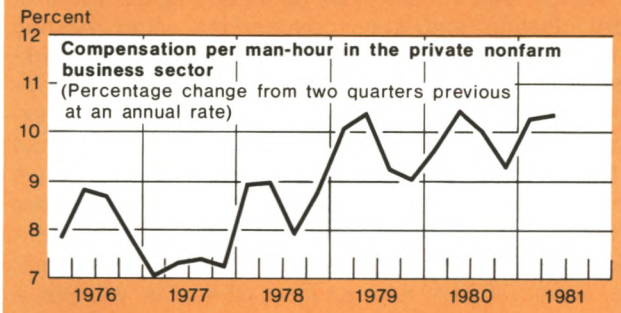
The business situation
Current developments

Chart 1

Measures of wage and compensation changes are giving mixed signals. Increases in adjusted hourly earnings in the private nonfarm economy appear to be moderating . . .



. . . while increases in average hourly compensation show no sign of slowing.



Source: United States Department of Labor, Bureau of Labor Statistics.

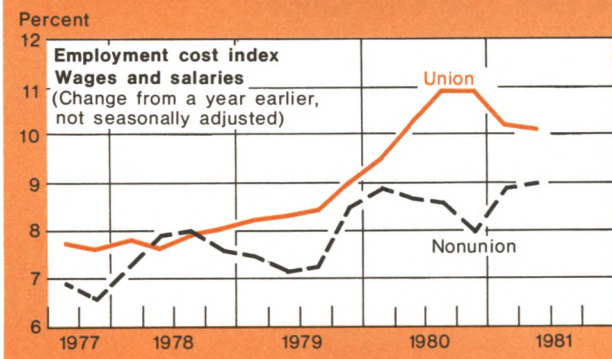
Economic activity leveled off during the summer months, following the mild downturn in the spring. Industrial production in August was essentially unchanged from what it had been last spring and, indeed, was still running slightly below the peak attained in March 1979. Auto sales, after languishing for most of the summer, strengthened in August and early September largely in response to the various merchandising incentives. At the same time, domestic auto production tapered off, with further cutbacks scheduled for later in the year. In the face of the high interest rates, construction activity continued to drop. Modest gains elsewhere in the economy, however, counterbalanced the weakness in construction, and the unemployment rate has held fairly steady.

The one bright spot in the economic situation has been the slowdown in inflation thus far in 1981. During the first eight months of the year, the consumer price index rose at an annual rate of 9.4 percent, in contrast to a 12.4 percent increase in 1980. The slowdown in price increases at the producers' level was even greater. The producers' price index for nonfood finished goods rose at an annual rate of 9.6 percent over the first eight months of the year as compared with a 13.4 percent increase in 1980. Looking ahead to the longer term, the extent to which the price slowdown is maintained will depend critically on what happens to wages and productivity.

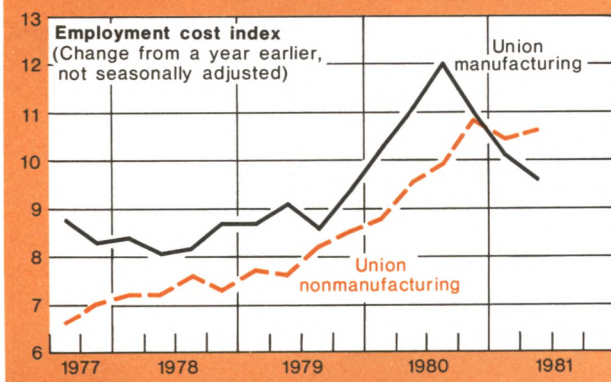
The various measures of wages and compensation have been giving off mixed signals (Chart 1). Many of the series do tend to be fairly erratic, which makes it difficult to interpret them over short time periods. Over the six months ended in August, average hourly earnings in the private nonfarm economy rose at an annual rate of 7.8 percent, compared with a 10.3 percent rate of increase in the previous six-month period.

Chart 2

Union wage increases appear to be leveling off . . .



. . . with the slowdown concentrated in manufacturing.



Source: United States Department of Labor, Bureau of Labor Statistics.

(The earlier jump in wages reflected in part the 8.1 percent increase in the minimum wage effective in January.) This moderation follows nearly two years of accelerating wage advances. A sharp rise in hourly wages occurred in August, but this could be a result of some bunching of pay raises that was not corrected by the seasonal adjustment process.

In contrast, no clear-cut sign of moderation has yet appeared in average hourly compensation (which includes wages, salaries, and fringe benefits). Hourly compensation in the nonfarm business sector rose at an annual rate of 10.6 percent over the first half of 1981, compared with a 9.5 percent rate of increase in the previous two quarters. The first-quarter 1981 compensation increase was inflated in part by the January 1 increase in social security taxes paid by employers. Nevertheless, since growth of compensation in the second quarter of 1981 was at an annual rate of 9.6 percent, there is little sign of any marked slowing.

Union wage increases appear to be leveling off (Chart 2). In the second quarter of 1981, wages of all unionized workers covered in the employment cost index rose at an annual rate of 10.1 percent from twelve months previous, down slightly from the increase in 1980. This flattening-out of union wage increases follows a two-year acceleration that reached a plateau toward the end of 1980. Industry detail shows that the moderation is concentrated in the manufacturing sector. Wages of unionized workers there rose in the second quarter of 1981 at an annual rate of 9.6 percent from year-earlier levels, the smallest increase since the fourth quarter of 1979.

Data on effective wage adjustments in major collective bargaining agreements also point to some slowing of union wage advances. For the union sector as a whole, total effective wage adjustments (which reflect first-year increases negotiated in the quarter, as well as increases under earlier contracts and cost-of-living increases under current and prior contracts) were at an annual rate of 11.7 percent in the second quarter, down from the 13.9 percent rate of the second quarter of 1980. Wage and benefit increases in newly negotiated contracts ran a bit higher during the first half of 1981 than they had over the same period last year. However, the larger wage and benefit increases negotiated so far this year partly reflected the fact that comparatively few of these agreements contained cost-of-living adjustments (COLAs).[1] Wage increases have tended to be higher for settlements without COLAs. In any case, 1981 is a light bargaining year, so that these larger settlements will have only a modest impact on the overall trend in union wages.

Recent collective bargaining activity has been influenced by severe economic difficulties in a number of industries. Since the end of 1979, an unusual surge of plant closings and wage concessions under existing contracts have affected a total of nearly 300,000 workers (over a third of whom were auto workers). Revisions of collective bargaining agreements before expiration because of adverse business conditions had been relatively rare. The wage concessions that have occurred since 1979 have taken many forms and have affected both union and nonunion workers. For example, under the much-publicized Chrysler agreement, the current COLA and future COLAs, as well as a

[1] Only 21 percent of the workers under these settlements were covered by COLAs, whereas 57 percent of all workers under major collective bargaining agreements are covered by COLAs.

scheduled wage increase, were to be foregone for the duration of the contract. The Firestone Company, which had announced the closing of seven plants, obtained a 14 percent wage cut for certain workers as well as COLA concessions by both union and nonunion employees.

By and large, the impact of these concessions on total effective adjustments has been small. Nevertheless, the proliferation of such concessions may influence the tone of future negotiations. Similarly, it is not possible to measure the extent to which the climate for collective bargaining has changed in the aftermath of the recent air-traffic controllers' strike. But this, too, has the potential for affecting future settlements.

The Federal Government is bringing strong pressure for wage moderation for its own employees. President Reagan recommended that Federal white-collar workers receive a 4.8 percent pay increase in October.[2] If the Congress concurs, this would be the smallest average increase for Federal white-collar workers since their 1973 raise. The Congress had already passed a statute limiting the wage increases for Federal blue-collar workers for fiscal 1982 to 4.8 percent as well. Reducing wage increases for Federal workers may also induce a slowing in the private sector by moderating the wage increases necessary to attract workers to comparable private-sector jobs.

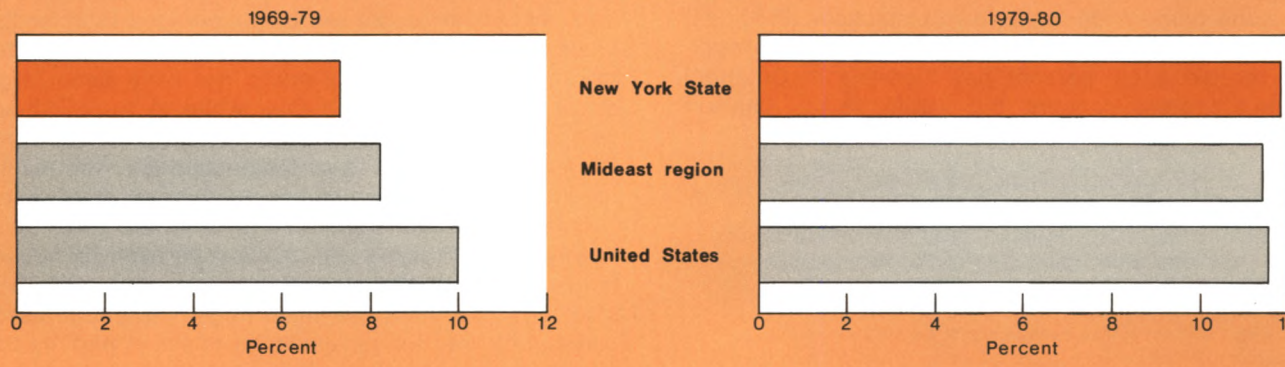
Additional downward pressure on wages, it has been suggested, could come from the recently enacted personal income tax cuts, the first of which took effect on October 1. Because the tax cuts increase take-home pay, workers may feel under less pressure to push for wage increases just to maintain their purchasing power. Moreover, the tax cuts strengthen work incentives. Some people will be encouraged to enter the labor force, whereas their take-home earnings under the previous tax system would not have been large enough to make it worth their while to work. Others who do have jobs will find it advantageous to work longer hours or even to take a second job. The resulting increase in workers and work effort will also lessen overall pressure for wage increases. At the same time, however, much of the tax cuts will be used by households to buy additional goods and services. Within a short period of time, the initial wage moderation associated with the tax cut could be offset in part by the influence of these demand pressures. Thus, it is unclear what the net effect of the tax cut on wages would eventually be.

[2] The President's recommended increase for white-collar workers earning less than $50,112 a year is less than one third of the 15.1 percent increase that would be called for under the provisions of the Pay Comparability Act of 1970. The President's recommendation automatically takes effect in October unless overridden by the Congress. President Reagan also recommended that Federal executives, whose pay has been frozen since 1979, receive a 4.8 percent annual increase. Included in this group are middle- and senior-level executives. However, on September 30, the Congress rejected any immediate increase in pay for these positions. Military personnel, in contrast, will receive the full 15.1 percent increase.

NEW YORK EXPERIENCES RENEWED STRENGTH IN PERSONAL INCOME

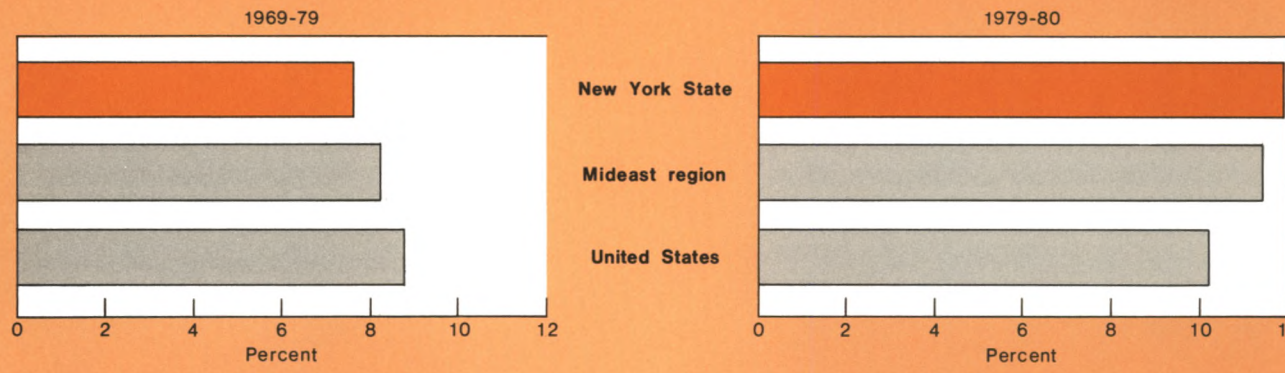
Until recently, growth of total personal income of New York State residents had been lagging the nation and the mideast region.* In 1980, however, it advanced at about the same pace.

Total Personal Income
Average annual growth



In fact, adjusting for population change, personal income per capita in New York State increased more rapidly in this latest period.

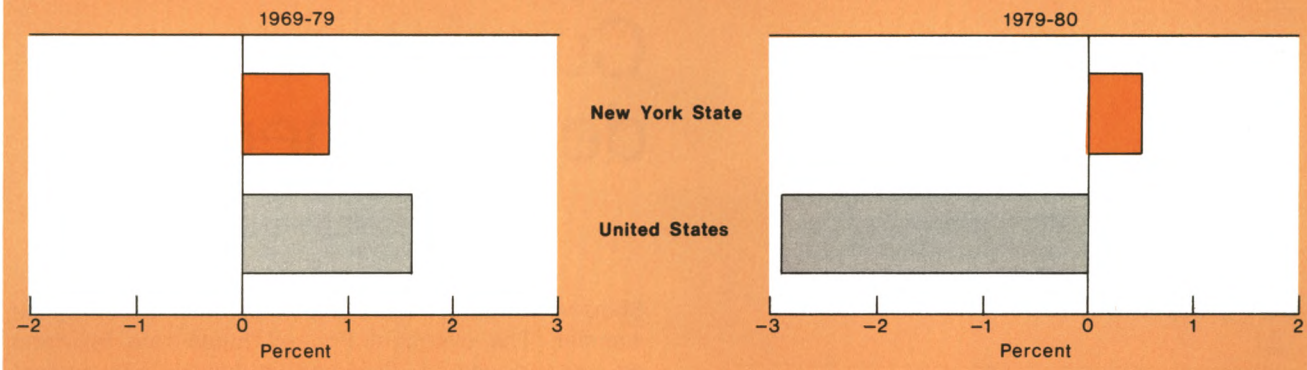
Per Capita Personal Income
Average annual growth



*The mideast region includes Delaware, District of Columbia, Maryland, New Jersey, New York, and Pennsylvania.

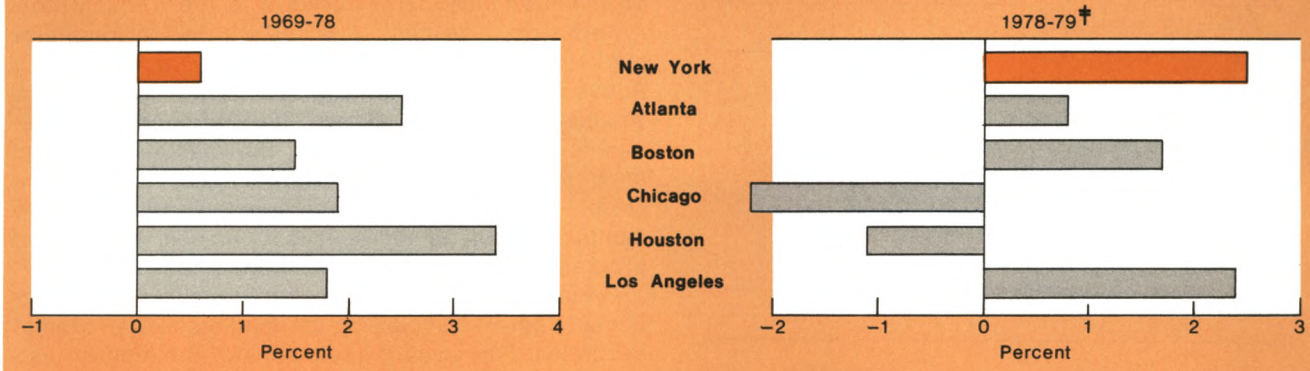
This difference is even more pronounced in real terms because of the relatively modest rate of inflation in New York State.†

Real Per Capita Personal Income
Average annual growth



In fact, by the end of the seventies, real per capita growth in the New York City metropolitan area exceeded that in other localities of the south and west as well as those which, like New York, had problems in the early to midseventies.

Real Per Capita Personal Income in Selected Metropolitan Areas
Average annual growth



† In the absence of a consumer price index for New York State, an average of the indexes for the New York-Northeastern New Jersey and Buffalo metropolitan areas was used.

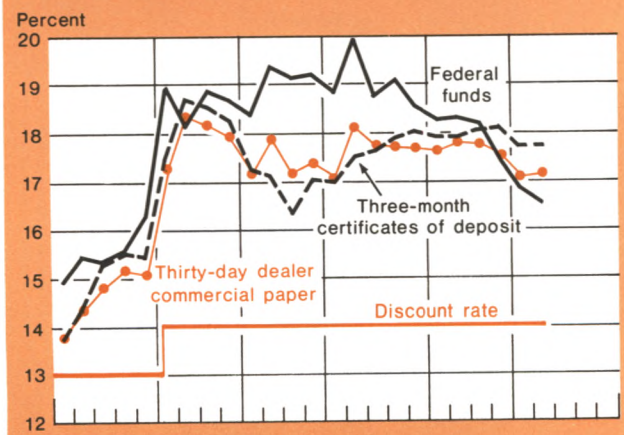
‡ Local area data are available only through 1979.

Source: United States Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System.

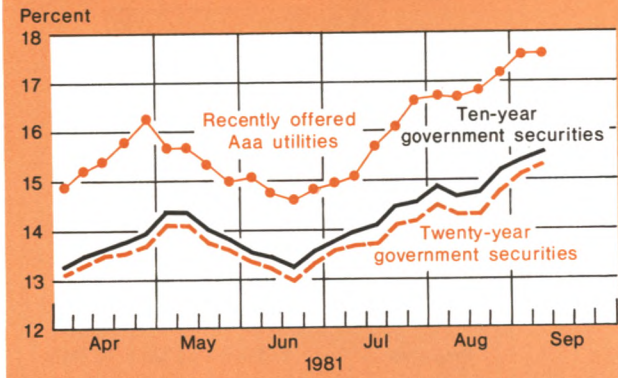
Prepared by Rona B. Stein and Mark A. Willis

The financial markets
Current developments

Most short-term rates began to decline during September . . .



. . . but long-term rates reached record levels.



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

Short-term interest rates began to decline during the summer. The overnight Federal funds rate fell from an average level of 19 percent in July to 16½ percent in the second week of September. Most other short-term rates, however, fell by only 100 basis points or so during this interval. The ensuing reductions of commercial banks' prime lending rates, which began in mid-September, brought the prevailing prime rate down to 19½ percent by September 21. On the same day, the Federal Reserve reduced the surcharge imposed on loans to those large banks who are frequent borrowers from 4 percent to 3 percent. In the long-term markets, in contrast, yields continued to rise during August and September, and record-high yields were established in many sectors. Although bond yields began to fall in mid-September, the markets remained fairly unsettled. Investors were concerned with the sizable Treasury borrowing schedule for the next few months, as well as the deficits contained in the fiscal program planned for the next three years (chart).

Certain aspects of the fiscal program have had a particularly adverse impact on the markets for tax-exempt securities. Forthcoming reductions of the highest marginal tax rates on personal income, and the introduction of the tax-exempt all savers' certificates, may have reduced the household sector's willingness to hold these securities at yields consistent with historical relationships between the returns on taxable and tax-exempt issues. The effects on state and local government budgets of scheduled reductions of Federal spending also may be a factor behind these markets' recent performance, as investors assess more carefully the fiscal strength of government borrowers.

Quite apart from the effects of fiscal policy changes, market participants report that two important groups

of traditional investors in tax-exempt securities—commercial banks and property and casualty insurers—have been backing out of the market in recent months. Both groups of institutions face reduced needs for tax-exempt income. And, like other investors, these institutions have been concentrating their purchases of tax-exempt securities in the shorter maturities. As a result of all these factors, yields on municipal securities—especially long-term issues—were bid up rapidly throughout the summer.

Mergers and acquisitions

In July, reports of developments in the financial sector were dominated by accounts of the financing arrangements for corporate mergers and acquisitions. Much of the attention focused on firms in the energy and chemical industries. In one six-week period, bank credit lines totaling more than $40 billion were arranged to support (or defend against) prospective business combinations involving firms in these industries.

By themselves, these credit lines will not have a substantial impact on United States bank credit growth. American banks and their overseas branches are responsible for only $20-25 billion of these lending commitments, with foreign banks holding the remainder. But this estimate of the total lending commitment of United States banks overstates the volume of lending that is likely to be undertaken. In several cases, a single prospective acquisition attracted the interest of several possible buyers, each of which arranged a credit line. With this double counting removed, the maximum volume of lending by American banks as a result of these commitments is on the order of $10 billion.[1] In comparison, the sum of loans and investments at United States commercial banks in July was nearly $1,300 billion. Of this total, business loans amounted to almost $350 billion.

Although public attention has been focused on a few large transactions, the overall pace of merger activity seems to have picked up in 1981. In the first six months of the year, both the number and dollar volume of mergers and acquisitions exceeded their totals for the comparable period in 1980. Several factors are at work here. The most pervasive may be an apparent relaxation of Federal antitrust policy. While the new Administration has continued to pursue cases against firms that exercise monopoly powers in fields that clearly would benefit from increased competition, it has tended not to impede business combinations—even those involving large firms—that would not create monopoly power.

In the new regulatory environment, large firms in several key industries have engaged in merger activity. In the financial services industry, this year's most notable mergers have been combinations of nonbank institutions designed to prepare for competition with commercial banks in retail or wholesale markets. And, in the energy field, the belief on the part of some firms that increases in the real prices of oil, coal, and natural gas will continue has spurred their interest in acquiring firms that own such resources. (It is clear, however, that the price expectations of the buying firms are higher than those of the market as a whole. Indeed, the market prices of energy stocks may reflect expectations of declining real energy prices.)

The relatively low levels of stock prices, adjusted for inflation, may be another factor behind the increase in merger activity. Once a firm decides to expand its operations, stock market conditions are an important consideration in its choice between acquiring other firms and investing in physical assets. For some time now, the relationship between the market value of a firm's equity and debt and the replacement cost of its physical capital at current production costs (that is, the replacement cost of capital) has been recognized as an important determinant of business investment spending. When market value is below replacement cost, it makes sense for firms to expand through mergers and acquisitions rather than by investment in physical assets. On the other hand, when market value exceeds replacement costs, it makes sense for firms to expand through the direct purchase of physical assets.

Somewhat surprisingly, previous periods of extraordinary merger activity have not been marked by weak stock market performances. There have been three such intervals in the last century—in the 1890s, during the last half of the 1920s, and again in the 1960s. Stock prices rose steadily during each of these periods, as did the pace of overall economic activity. But this historical evidence should not be interpreted as proof of the irrelevance of comparisons between market values and replacement costs. Trends in aggregate measures of stock prices can mask underlying movements in the relative market value of different firms or industries. Some of the historical evidence suggests that the relationship between market value and replacement cost has had an important effect in determining the means of expansion within particular industries.[2]

[1] There is a further complication. The effect of these loans on bank credit *statistics* depends on how the transactions are recorded. Loans booked at domestic offices of United States banks are included in the bank credit aggregate, but loans booked at overseas branches are not.

[2] See Burton G. Malkiel, George M. von Furstenberg, and Harry S. Watson, "Expectations, Tobin's q and Industry Investment", *Journal of Finance* (May 1979).

Implications for the banking system

This summer's merger activity in the chemical and energy industries reflected a greater than usual reliance on borrowed funds. Investment bankers and others involved in these transactions assert that this is due to the fact that shareholders have a strong preference for being paid immediately and in cash (as opposed to the exchange of shares or payment in debt securities). These assertions cannot easily be verified. If true, however, they would explain the need for acquiring firms to assemble large sums of cash quickly.

A continuation of large-scale bank lending in connection with merger activity would raise important questions for monetary policy. One such question is whether loans extended under these commitments would contribute to the growth of the money and credit aggregates. If they did, there would arise the question of how monetary policy should respond to the growth of those aggregates or to the changing patterns of credit flows that also might result. At first glance, it would appear that the appropriate policy response depends primarily on the effects of these activities on the financial system, particularly in the commercial banking sector. It is not possible to state a general conclusion, however, because there is a considerable range of feasible outcomes.

It is likely, though not inevitable, that there would be at least temporary increases in the broad monetary aggregates—M-3, L, and perhaps M-2. Since the borrowing firms manage their liquid assets very carefully, it is unlikely that they would hold the funds drawn from credit lines in demand accounts (and thus increase the level of M-1B).[3] But their temporary investments in repurchase agreements (RPs), certificates of deposit (CDs), or Eurodollars would increase the levels of the broader aggregates.

Once the shares of an acquired firm have been purchased, the former owners of the firm would have to allocate their receipts between reinvestment in equities, buying other financial or physical assets, and consumption spending. Since acquiring firms would have paid more than the market value of outstanding shares, the merger transaction would increase the wealth of the former shareholders. Their profits from the transaction would allow them to increase their consumption spending, bid up asset prices, or both.[4]

Initially, bank credit demand would be increased as a result of the merger financing. But subsequent decisions of corporate officials reacting to financial developments would determine whether the increase in the demand for bank credit would be temporary or permanent. Most of the large syndicated credits have been structured as revolving lines of credit for the first three or four years of the agreement and will be converted to term loans for the last four to six years. Under these arrangements, corporate borrowers can repay any borrowed funds (and terminate the lending agreements) without penalty at any point during the first three or four years. These credit lines relieve corporate borrowers of any immediate concern about the availability of funds for merger activity. But the relative prices of alternative sources of borrowed funds will determine the extent of continued reliance on bank credit. If corporate financial officials perceive the long-run costs of bond issuance or other forms of borrowing to be less than the cost of bank borrowing, they will pay down their bank loans with the proceeds of these borrowings.

In describing the range of possible effects of large-scale merger lending on the monetary and credit aggregates, it is easiest to examine two extreme cases. At the outset of any massive merger-financing episode, it is much more likely that banks would finance loans by buying liabilities (such as CDs, Eurodollars, or Federal funds) than by selling assets (loans or securities). If, at prevailing rates, former shareholders of the acquired firm chose to invest their stock-sale proceeds in such bank liabilities, the recycling of funds would be complete and the expansion in the broader aggregates and bank credit would not quickly be reversed.

But the rise in demands for money and credit caused by bank-financed merger loans could evaporate even before the original merger loans were paid off. If the former owners of the acquired firm preferred to hold claims other than bank liabilities—Treasury securities, for example—CD rates would have to rise in relation to those on Treasury issues, as the banking system tried to issue more certificates to a public which had no greater desire to hold them. Under these circumstances, with the relative returns on Treasury securities falling, the banks might choose to reduce their reliance on CDs, instead selling Treasury securities to continue the funding of their expanded loan portfolios. The merger financing would have had only transitory effects on the demands for the broader aggregates and bank credit. But the bank credit aggregate would include a higher proportion of loans and a correspondingly smaller proportion of securities.

It is likely, then, that bank lending for merger activi-

[3] Transitory increases in M-1B might occur, however, as buying firms move funds into demand deposits when checks to the former shareholders of the acquired firm are presented for payment.

[4] To the extent that shares were held by pension funds or other institutions, so that individuals did not perceive an increase in spendable wealth, aggregate consumption spending probably would not be affected very much, if at all.

ties would cause at least a transitory rise in the demands for the broader aggregates and bank credit. If acquiring firms found no preferable funding sources, and if banks did not sell off securities, the increase in bank credit demands would persist.[5] It is also possible that the rise in the demands for the broader aggregates would be lasting.

Policy implications

It is important to realize that potential increases in the demands for money and credit that have been discussed here are merely reflections of portfolio rearrangements. A variety of factors—the relationship of market value to replacement cost, antitrust policy, and others—may continue to encourage corporate merger activity. In executing these transactions, corporate officials again might decide to increase, at least temporarily, their reliance on bank borrowing. In the first instance, this increase in borrowing would not increase the aggregate demand for goods and services and would not add to inflationary pressures.

Any stimulus to economic activity that occurred subsequently, however, would be the result of investors' spending the proceeds of their stock sales[6] and would be virtually indistinguishable from other forces affecting spending in the economy. In turn, increased levels of spending would tend to raise the demand for M-1B. But, with an unchanged target for this aggregate, interest rate pressures would tend to counter the stimulus to spending. Hence, it would be consistent with unchanged policy goals for the Federal Reserve to pursue unchanged targets for the narrower aggregate. An adjustment of this target would be in order, however, if spending pressures from whatever sources led to inflation that ran persistently above goals.

The broader aggregates (M-2, M-3, and L) might be somewhat higher than they would have been without the flurry of merger lending. Banks would be able to support larger loan portfolios with the liabilities included in these aggregates, without having to bid up the rates on these claims as much as they would otherwise. As a result, the rates at which credit could be made available for other purposes would be little affected.

In the period immediately following the merger transactions, two distinct factors might impose upward pressure on interest rates. To the extent that expansionary pressures increased in the economy as a whole, any associated increase in borrowing demands would tend to raise rates. Moreover, the cost of bank loans might be particularly affected in the short run, since the funding of larger portfolios might strain banks' ability to raise funds at prevailing rates. The rise in interest rates would tend to counter the general increase in spending; it would not reduce the volume of funds available for lending to individuals or small businesses.

If the Federal Reserve were not willing to accept more rapid growth of bank credit and the broader aggregates, some other credit demands might be crowded out by merger financing, in the sense that the entire economy would be subjected to higher interest rates and some prospective borrowers would be forced to delay or cancel their plans. This restraint would exist even in the absence of a stimulus to spending from the wealth effects discussed above. In this case, concerns about the effects of merger lending on the borrowing opportunities of households and small businesses would have substance. These problems would arise, however, not from the merger financing itself, but from an unwillingness to tolerate deviations from the growth targets for the money and credit aggregates.

A summary

The current rise in corporate merger activity reflects a desire on the part of the managers and shareholders of corporations to reallocate the ownership of corporate assets. Although it has attracted much attention, the recent spate of lending activity involving the chemical and energy industries seems small in relation to the size of total loan holdings of the banking system. These financings, however, raised the question of how monetary policy should respond to a continuation of large-scale merger lending.

The financial transactions associated with a continuation of such lending should cause only small and transitory increases in the demands for M-1B. Their impact on the demands for the broader monetary aggregates and bank credit, however, could be more significant. To the extent that the pickup in the growth of the broader monetary aggregates and bank credit reflected the portfolio adjustments arising from the merger financing rather than intentions to spend, it would not represent additional inflationary pressures. Accordingly, largely accepting the resulting run-up in the broader aggregates would not seem inappropriate.

Merger activity raises public policy questions concerning the organization of American business. For the financial markets, however, the issue of immediate concern is not whether such activity is healthy or unhealthy, but what monetary policy would be appropriate to the pursuit of unchanged economic goals.

[5] Again, however, the net impact of accounting decisions by banks with foreign branches could distort the statistical results. See footnote 1.

[6] Such spending might be encouraged by the increased liquidity of the former shareholders' portfolios. See footnote 4.

Evolution and Growth of the United States Foreign Exchange Market

The foreign exchange market in the United States has undergone substantial changes over the past several years. The number of institutions and individuals operating in the market whether for commercial or financial reasons has increased sharply. Trading volumes have expanded dramatically, with turnover amounting to $23 billion a day as measured by the Federal Reserve Bank of New York's March 1980 market survey, nearly a fivefold increase from the $5 billion recorded in April 1977. New York, by far the largest of United States trading centers, has been transformed from a regional market to a major link between Europe and the Far East that now rivals London as the leading center for global foreign exchange dealings.

This shift in the importance of the United States foreign exchange market is closely associated with the growing internationalization of the United States economy. The share of United States exports and imports in gross national product (GNP) has risen, foreign banks have established a presence in the United States just as this country's banks have moved overseas, and the ebb and flow of capital is much freer and more rapid among major financial centers here and abroad.

A second key factor precipitating broader and more active involvement in the United States foreign exchange market has been the dramatic sharpening of exchange rate fluctuations. While the causes of exchange rate volatility are complex and controversial, most observers can agree that far-reaching disturbances to the world economy are involved. The increase in the world price of oil, the accumulation and recycling of Organization of Petroleum Exporting Countries (OPEC) surpluses, wide swings in inflation and output, and shifts in monetary and fiscal policies among industrial countries have all contributed to the gyration in exchange rates. But, regardless of the ultimate cause, it is clear that exchange rate volatility has created the potential for large exchange gains and losses, inducing changes in financial behavior. Top bank management has focused more closely on the importance of currency exposures, a growing number of banks have positioned their trading operations as profit centers, and income from foreign exchange trading has become an important source of commercial bank earnings. For business firms, the management of money and foreign exchange has become an integral part of financial operations and planning. Efforts to reduce currency risk to assets and future cash flows and, to a lesser extent, to minimize the impact of currency fluctuations on reported incomes have led to more sophisticated corporate risk management techniques, often involving a more active presence in the exchange market. Other institutions and individuals have also become increasingly sophisticated about the role of foreign exchange in financial management, as evidenced by the growth of multicurrency-denominated portfolios and the development of a large market for trading foreign exchange futures.

A third development important to the growth of the United States foreign exchange market involves changes in trading practices and conventions. Direct dealing between United States banks, international bro-

kering, and quoting rates in European terms are recent innovations which have improved the functioning of this country's market and helped integrate it with the broader global foreign exchange market. This article, based on discussions with market practitioners in New York and drawing on data from the March 1980 survey of the United States market by the New York Federal Reserve Bank, reviews in greater detail the developments that have contributed to the evolution and growth of the United States foreign exchange market. The first section examines changes in commercial bank behavior, the second looks at the activities of nonbank participants, and the third and final section describes innovations in foreign exchange dealing relationships.

Changes in commercial bank behavior

Interbank trading has soared in recent years beyond what is strictly attributable to hedging the increased volume of customer business. Under the assumption that banks normally require between four and six transactions to cover each customer order, fully one half of the $385 billion increase in foreign exchange turnover between 1977 and 1980 is accounted for by "pure" interbank positioning. The growth of interbank business is most evident in the spot market where, according to the March 1980 survey, interbank trades exceeded customer deals by a factor of twenty, compared with a multiple of ten in the April 1977 sample. This pickup in active professional trading has occurred principally in response to three developments in the foreign exchange market during the 1970s.

- United States banks have responded to a shift in the locus of foreign exchange demand to the United States market both by expanding their foreign exchange trading operations and by changing the nature of this activity from part of customer services to an important profit center, thereby bringing banks into the market more than previously as principals trading for their own accounts.

- The entry of a large number of foreign banks to New York has sharpened competitive conditions, reinforcing the change already under way toward more active position-taking.

- Exchange rates have displayed larger and more unpredictable fluctuations than before, and this heightened uncertainty has contributed to rapid intraday trading at the expense of longer term positioning.

Profit-center foreign exchange trading

An active foreign exchange market has been slower to develop in the United States than other major industrial countries. Traditionally, the role of the foreign sector in the United States economy has been comparatively small, United States trade has been dollar denominated, and United States multinationals transacted most of their foreign exchange business abroad. Lacking a sufficient base for establishing full and active foreign exchange trading departments and concerned about the liquidity of the market, most United States banks restricted noncommercial volumes to matching off customer transactions in the interbank market by amount and by value date. Over the past several years, however, a growing number of United States banks have become willing to position heavily in foreign exchange on the basis of expected changes in exchange rates and in interest rate differentials, although such positions are increasingly held for only limited time intervals. Banks have found it desirable to take on exposures and to maintain an active presence in the market in order to offer a more competitive service to a growing customer base and to take advantage of the profit opportunities perceived in fluctuating exchange rates.

The major impetus behind this change in approach is the growing international orientation of United States economic relationships. This country's trade and inward and outward direct investment have expanded sharply. International financial management is also evolving rapidly. Corporations and individuals, seeking protection from a volatile inflationary environment and responding to the incentives in fluctuating exchange rates, now include the world's major currencies in their portfolio decisions. Banks themselves are taking a global view of their assets and liabilities. Indeed, the location of economic activity no longer indicates where associated financial transactions will be executed or in what currency they will be denominated.

Furthermore, the tendency for United States corporations to centralize money and foreign exchange management at headquarters and the development of currency futures in Chicago have led more participants to turn specifically to the United States market for their foreign exchange requirements, as did also European restrictions on bank exchange transactions imposed following the 1974 failure of Bankhaus Herstatt. The United States authorities, by contrast, resisted the imposition of official controls in response to the Herstatt crisis and the difficulties experienced by Franklin National Bank.

This resistance to official controls was itself a strong inducement for many participants to transact foreign

Overview of the United States Foreign Exchange Market*

The United States foreign exchange market consists of a network of commercial banks—located principally in New York and, to a lesser extent, in other major cities—which buy and sell bank deposits ("exchange") in another currency, and of several organized exchanges, which trade foreign exchange futures contracts. Except for the currency futures market, there is no central marketplace where participants meet to trade. Instead trading is over the counter, with dealers communicating directly by telephone and telex or indirectly through foreign exchange brokers who serve as agents, bringing together buyers and sellers for a fee.

While most banking institutions are prepared to offer their customers a service in foreign exchange, there are only about 80-100 banks that actively trade foreign exchange for their own account. Of these, relatively few act as market makers by standing ready to quote fresh prices and execute business up to recognized amounts. At the same time, foreign exchange brokers in the United States number less than a dozen. Thus, the heart of the market is comparatively small.

The overwhelming bulk of all transactions occurs in the interbank market, where banks seek to hedge or manage their exchange risk and to anticipate exchange and interest rate movements. Their operations give the market liquidity and make possible the smooth transaction of customer business. The customer or retail market, which accounts directly for as little as 10 percent but indirectly for perhaps as much as 50-60 percent of all exchange deals, consists of multinational corporations, nondealing banks, other nonbank financial institutions, and individuals.

Roughly two thirds of all foreign exchange transactions are conducted spot, that is, at current exchange rates for value two business days after the dealing date. Another 30 percent of all transactions are swaps involving the simultaneous purchase and sale of a specified amount of foreign currency for two different maturities. Swaps are most commonly used to fund exchange positions, to take a view on interest rate differentials between two currencies, and in borrowing and lending operations. Only 6 percent of total exchange transactions are outright forwards involving a single purchase or sale of foreign currency for a value date more than two days in the future.

Foreign exchange trading in the United States is highly competitive. No one bank or single group of banks commands a dominant share of turnover in such major currencies as the German mark, Japanese yen, Canadian dollar, or pound sterling. However, in other currencies such as the Belgian franc and Italian lira where the strength of commercial, financial, and speculative demand does not support an active market, trading is relatively more concentrated among a few banks.

In the United States, foreign exchange trading

Table 1

Turnover Statistics

In billions of dollars

	April 1977 44 banks	March 1980 41 banks	March 1980 90 banks
Total	106.3	325.8	491.3
Spot	58.7	216.0	315.4
Interbank	54.0	206.1	300.4
of which: brokers	23.1	104.3	162.5
Customer	4.7	10.1	15.1
Outright forwards	5.6	22.4	29.4
of which: International Monetary Market	*	4.5	6.3
Swaps	42.1	87.2	146.5

* Not available.

Federal Reserve Bank of New York: Foreign Exchange Turnover Surveys (April 1977 and March 1980).

* For a full review of the market, see Roger M. Kubarych, *Foreign Exchange Markets in the United States* (Federal Reserve Bank of New York, 1978).

Overview of the United States Foreign Exchange Market* *(continued)*

is not regulated, though bank examiners review exchange transactions as a normal part of routine bank supervision. Commercial banks operate under self-imposed internal controls that cover most aspects of their involvement in the market. Issues related to foreign exchange trading, operations, and technical practices are discussed on the institutional level in the forum of the Foreign Exchange Committee, established in 1978 under the sponsorship of the New York Federal Reserve Bank. The Foreign Exchange Committee consists of representatives from east coast, regional and foreign banks, brokerage firms, and as observers members of the FOREX Association of North America. The FOREX brings together as individuals a large number of traders and brokers from 220 banking and 19 brokerage offices around the country.

Table 2

Turnover and Market Share of Active Trading Banks by Currency

March 1980

Currency	Turnover (billions of United States dollars)	Share of 4 most active banks (percent)	Share of 8 most active banks (percent)	Share of 20 most active banks (percent)
German mark	155.8	28.0	45.6	73.9
Pound sterling	111.5	24.3	43.9	74.9
Canadian dollar	60.0	30.3	50.8	82.8
Swiss franc	49.7	38.0	62.5	89.0
Japanese yen	50.0	32.4	51.8	82.2
French franc	33.6	51.8	73.8	95.0
Netherlands guilder	9.3	48.4	72.9	97.4
Belgian franc	5.1	50.0	77.4	98.6
Italian lira	4.2	69.2	85.5	97.7
Other	10.7	60.4	78.4	96.0
Total	490.1	24.9	39.0	67.3

Data based on the Federal Reserve Bank of New York's Foreign Exchange Turnover Survey (March 1980).

exchange business in the United States, for it underscored a strong philosophical commitment to free and open financial markets. Rather than regulate foreign exchange trading banks, supervisory authorities defined general guidelines for prudent business practice in foreign exchange and placed responsibility for compliance on individual banks.[1] Accordingly, top bank executives established explicit policies to control exchange risk, mismatch risk, credit risk, and other risks inherent in foreign exchange operations. These internal controls put United States banks in a far better position to manage their foreign currency exposures, provided the basis for holding exchange trading departments explicitly accountable for their contribution toward earnings, and gave management the confidence to expand the volume of trading activity.

Foreign bank competition

Increasingly, the world's major banks have moved to establish branches or affiliates in New York and other financially prominent American cities. In 1979 there were 234 foreign-owned banking offices from 48 countries in New York, compared with 139 in 1976. Foreign banks have found numerous attractions in the United States in addition to servicing the business interests of their customers: direct access to the United States loan market and a huge dollar funding pool; cost and informational advantages in operating locally rather than through correspondents; locational benefits in servicing Latin American and Canadian clients, among others. While foreign exchange has not been a major motivation for establishing offices in the United States, most foreign banks have consciously used their trading departments to help cover business costs and as a marketing tool in developing relations with United States multinational corporations. Table 3 illustrates that foreign banks enjoy a sizable share of market turnover in their home currencies, ranging from 14 percent of trading in the Canadian dollar through 27 percent in the Japanese yen and up to 46 percent of trading in the French franc.

Foreign banks have had certain natural advantages in handling foreign exchange business. Foreign exchange trading reached an earlier and fuller development in Europe, owing to the relatively large role of foreign trade in European economies. The use of foreign exchange to carry out open market operations by central banks in countries lacking broad and deep domestic money markets also spurred foreign exchange trading. Over time, Continental banks evolved a comparatively aggressive style of trading, based on the continuous purchase and sale of currencies to earn a middleman's spread and to capitalize on very short-term fluctuations in rates. This type of transactions dealing—which developed during the Bretton Woods regime of exchange rates as a complement to longer term positioning—encouraged traders to sharpen their skills in assessing the impact of new information, in evaluating how other traders would react, and in giving customers the best quotes. Foreign banks have thus added to the competitiveness of the United States foreign exchange market. This challenge occurred in a period when American banks were finding that, with greater corporate sophistication about the workings of foreign exchange, they could no longer enjoy comfortable spreads on their customer business but had instead to pursue additional earnings by correctly positioning themselves in the market.

Table 3
Foreign Currency Trading by Foreign Banks in the United States
In percent

Country of origin	Number of banks	Market share of domestic currency
Germany	8	24.2
United Kingdom	4	16.5
Canada	5	14.4
Japan	8	27.1
Switzerland	3	20.1
France	6	46.0

Data from Federal Reserve Bank of New York, *Foreign Exchange Turnover Survey* (March 1980).

Exchange rate volatility

With the unusual variation in exchange rates since 1973, market practitioners report and a number of formal studies indicate that predicting exchange rate changes has become extremely difficult. Forecasts of future spot rates based on forward rates are quite imprecise, leaving investors vulnerable to substantial losses. Similarly, analytic models, while providing basic insights into the determinants of exchange rate changes, are typically poor predictors of actual exchange rate movements. Moreover, comparisons of exchange rate forecasts with actual exchange rate movements show that the prediction error characteristically becomes larger with a lengthening in the

[1] See "Uniform Guidelines on Internal Controls for Foreign Exchange Activities in Commercial Banks", reprinted in *The Foreign Exchange Committee Annual Report 1980*, for an outline of minimum internal controls for foreign exchange activities in commercial banks recommended by Federal bank regulatory agencies and released by the Federal Financial Institutions Examinations Council.

forecast horizon. Not surprisingly, banks establishing profit goals within what for them constitute acceptable levels of risk have generally found it prudent to pursue profits over rather short time horizons.

To isolate the risk characteristics of exchange rate fluctuations, Table 4 presents the average standard deviation of daily, weekly, and monthly percentage changes in the dollar spot rate *vis-à-vis* several major currencies. The standard deviation is taken as a good measure of risk on the grounds that unpredictability is associated with, if not implied by, variability. The numbers clearly indicate that higher levels of risk are associated with longer term exchange rate changes. They also confirm that position-taking in the interbank exchange market has become even riskier in recent years particularly following the October 1979 change in monetary policy by the Federal Reserve, which placed greater emphasis on the supply of bank reserves and less emphasis on the Federal funds rate in moderating the growth of money and credit in the United States economy. Indeed, all currencies except the Swiss franc show a significant increase in daily, weekly, and monthly variability after October 1979, compared either with the entire preceding period of generalized floating or with the period immediately following the November 1, 1978 dollar defense package when the United States authorities undertook to intervene more forcefully to maintain orderly markets for the dollar.[2]

This higher risk environment has prompted market professionals to shrink back even further from operations based on longer run exchange rate expectations.

[2] For an extensive discussion of the link between the Federal Reserve's monetary control procedures and spot and forward exchange rate volatility, see "The New Federal Reserve Operating Procedure: An External Perspective", *New Monetary Control Procedures* (Federal Reserve Staff study, Vol. II, Board of Governors of the Federal Reserve System, February 1981).

Table 4

Spot Exchange Rate Variability

Standard deviation of percentage changes*

Currency	March 1973 through October 1979	November 1978 through October 1979	October 1979 through August 1981
Daily changes:			
German mark	0.573	0.427	0.706
Swiss franc	0.738	0.596	0.790
Japanese yen	0.488	0.590	0.736
Canadian dollar	0.195	0.211	0.250
Sterling	0.462	0.512	0.647
Weekly changes:			
German mark	1.290	0.977	1.556
Swiss franc	1.630	1.471	1.777
Japanese yen	1.128	1.316	1.640
Canadian dollar	0.469	0.511	0.578
Sterling	1.069	1.263	1.465
Monthly changes:			
German mark	3.046	2.197	3.514
Swiss franc	3.430	2.886	3.791
Japanese yen	2.609	2.150	3.789
Canadian dollar	1.158	1.309	1.231
Sterling	2.450	2.830	3.388

* The standard deviations of weekly and monthly changes represent means of standard deviations of five series of five-day percentage changes and twenty-one series of twenty-one-day percentage changes. Thus, for example, weekly percentage changes were measured Monday to Monday, Tuesday to Tuesday, and so on to obtain five nonoverlapping series. Similarly twenty-one nonoverlapping series of monthly intervals were constructed, approximating percentage changes from the first day of a given month to the first day of the next month, successively for all subsequent business days.

Source: Data from Board of Governors of the Federal Reserve System.

The time between the taking on and the unwinding of positions has become very short, amounting to minutes and hours rather than days and weeks as traders have sought to catch and profit from intraday turns in the rate. The reluctance to carry exposures for even so short a period as overnight is underscored by data collected by the United States Treasury showing a decline since 1977-78 in end-of-day positions for the most active trading banks.

The emphasis on rapid "in and out" transactions has also led to an explosive rise in spot turnover at the expense of swap trading. As documented by the March 1980 survey, the share of total turnover accounted for by swaps declined to 30 percent from 40 percent in April 1977. With more positioning done intraday and thereby squared off rapidly, banks have cut back on the financing requirements that would otherwise be satisfied through swap transactions. Also, expanded activity in the spot market has stretched thin the pool of talent available to conduct technically sophisticated trading to profit from expected changes in differentials between dollar and foreign currency interest rates.

While rapid intraday spot trading minimizes exchange risks relative to longer term positioning, this approach to trading is not without major drawbacks. Insofar as each transaction entails the obligation to make payment, the explosive rise in daily settlements associated with heavy intraday trading has heightened the possibility of payment errors and of outright losses due to the failure of counterparties to deliver. This adds to normal business and credit risks. Soaring transactions volumes have also entailed such heavy operating costs that many banks have witnessed a declining rate of profitability. Furthermore, the very unwillingness of banks to hold positions for any length of time (which may be thought of as a reduction of their inventories) can itself accentuate erratic or one-way rate movements. Excesses of supply or demand rather than being cushioned through interbank inventory adjustments are more quickly reflected in rate movements. Under such circumstances, the growing number of participants who operate on the basis of technical models have at times exerted a noticeable influence on exchange rate changes.

These problems have led major banks to begin reviewing their operations with a view toward improving returns on a risk- and cost-adjusted basis. One possibility under consideration is the assumption of longer term positions to improve profit potential. Depending on the attitudes of management and the perceived adequacy of capital, some banks may decide that the improvement in prospective returns and the reduction of operating costs are adequate compensation for the higher level of risk associated with somewhat longer term exposures. Another option under review is to shift greater resources into swap positioning in order to profit from anticipated changes in interest differentials. Banks engaging in swap operations need not expand their balance sheets since swap transactions involve forward assets and liabilities held on a contingent basis. While swap operations entail potential losses arising from gaps between the timing of payments and receipts, they do not give rise to open exchange risk since the same amount of currencies are simultaneously bought and sold.

Accordingly, foreign exchange trading banks may find incentives to relax the strategy of positioning very heavily intraday on the basis of exchange rate expectations in favor of more swap market operations based on interest rate considerations. Expanded swap activity may also arise with the establishment of International Bank Facilities (IBF) later this year. Through such facilities, banks operating in the United States will be able for the first time to take deposits or extend credit in foreign currencies when transacting business with foreign residents. This may encourage the use of swaps as an alternative to the domestic money markets in generating dollar or foreign currency funding, particularly by United States banks first entering the Euromarkets through the IBF or by others shifting some of their Eurocurrency business to the United States from markets abroad.

Expanding nonbank participation in the United States foreign exchange market

With institutions and individuals turning more frequently and in greater numbers to the United States foreign exchange market, nonbank purchases and sales of foreign exchange quadrupled from an estimated $10 billion a month in early 1977 to $42 billion in the March 1980 survey. Customer demands grew much faster than would otherwise be indicated by the expansion in United States trade at 75 percent and the pickup in United States firms' overseas assets and liabilities at 60 percent over the same three-year period. Indeed, a large portion of the surge in foreign exchange activity reflects new and sophisticated adaptations to a volatile financial environment, as evidenced in more active corporate hedging practices, the development of multicurrency-denominated portfolios, and the growth of foreign currency futures trading.

Corporate hedging

In recent years, United States corporations have placed greater emphasis on the economic effects of exchange rate fluctuations, have increasingly centralized their treasury functions, and have deepened their under-

standing of foreign exchange market operations. While these developments originated in the volatile exchange rate environment of the early 1970s, they accelerated rapidly in response to the Financial Accounting Standards Board Rule No. 8 (FASB-8). By requiring that exchange gains and losses be recognized immediately as part of quarterly income, rather than being smoothed out or deferred through the use of reserve accounts, FASB-8 made reported quarterly earnings vulnerable to the impact of large exchange rate swings.

An early corporate reaction to FASB-8 was to hedge balance-sheet exposures in order to minimize the effect of foreign exchange translation on earnings per share. Over time, however, financial analysts and shareholders have learned to discount the impact of accounting-induced gains and losses on corporate income. And corporate treasurers themselves have found that decisions taken to hedge balance-sheet exposures sometimes prove uneconomic, compromising longer term goals of protecting the value of the firm. Consequently, companies have tended to move away from translation exposure as the most relevant measure of what should be hedged toward a broad economic definition of exposure, taking into account current and anticipated cash flows.

As exchange rate considerations have gained in importance, United States firms have lodged greater foreign exchange expertise and decision making at headquarters. The centralization of foreign exchange management, most often at the level of the parent, has been accompanied by a shift in the actual implementation of transactions to New York and to other major cities from foreign entities overseas. But the adoption of a centralized approach has also fostered the growth of the United States foreign exchange market in less direct ways. Because large corporations frequently deal in a number of alternative markets simultaneously, their willingness to transact business in New York has provided United States banks with incentives to offer highly competitive rates on currencies. Moreover, corporate demands for market analysis and counsel have encouraged the growth of bank foreign exchange advisory services and trained personnel, enhancing the stature of New York as a financial center.

These changes in corporate structure and behavior have also led to the adoption of more sophisticated exposure management strategies. In practice, fewer corporations than in the past operate at the extremes of never or of always hedging their exchange risks.[3] Because major differences among currency risks and returns are not canceled out over the relevant corporate time horizon of several months, a strategy of ignoring currency exposures can be disastrous. On the other hand, the costs of being fully covered can also be unnecessarily high, easily outweighing the expected losses of not covering and frequently exacting a price in terms of basic economic objectives. Also, avoiding all exchange losses by definition precludes the opportunity for foreign exchange gains. Accordingly, a growing number of corporate managers now seek to establish a desirable level of exposure subject to acceptable risks and costs. This has had a number of consequences.

(1) More firms have chosen to manage their foreign exchange positions actively and to diversify their exposures across currencies. As a result, many transactions previously regarded as risky are now part of sound financial practice. Also, exposure management tools once thought to be rarefied have gained broader acceptance among corporate treasurers. These include financial pooling and the reinvoicing of trade among subsidiaries to satisfy all but the net funding and foreign exchange requirements of local units, sometimes through the vehicle of multicurrency management centers established in offshore low tax areas.

(2) Even while remaining essentially risk adverse and continuing to attach more importance to avoiding exchange losses than to benefiting from exchange rate gains, corporate managers are now more willing to respond to actual and expected changes in exchange rate returns. Leading and lagging, shifts in borrowing, variations in inventories, and other mechanisms to change the mix of assets and liabilities are more commonly used to move into currencies with actual and anticipated rising yields and to move away from currencies with actual and anticipated falling yields.

(3) Companies report a growing willingness to shift in and out of hedges. Reversing a hedge or a covering mechanism may be essential to minimize actual or opportunity losses if exchange rates move in directions opposite to forecast or if rates reach levels more quickly than initially anticipated. With rate movements becoming more volatile, the risks of actual losses have increased, while the opportunity costs of not buying or selling foreign currencies at the most favorable prices (which are never known with certainty) have also mounted. Not surprisingly, therefore, a growing number of corporate treasurers have turned to a more active approach to exposure management, with the

[3] Hedging is used here in the broadest sense to include all techniques that change, neutralize, or offset a company's exchange risk, rather than in the narrow sense of the purchase or sale of foreign exchange to protect balance-sheet positions from currency fluctuations.

result that foreign exchange transaction volumes have increased dramatically.[4]

Multicurrency portfolios

Amid heightened exchange rate volatility, the desirability of holding multicurrency portfolios has become increasingly obvious. Diversified portfolios are insulated from the effects of exchange risk to the extent that the distribution of currencies on the asset side is matched to actual or expected liabilities. Alternatively, if some currency exposure is accepted, then diversification can lead to lower portfolio risk for a given level of expected return, essentially because there is reason to expect fluctuations in the return of any one currency to be partially offset by opposite fluctuations in the return of another currency. Accordingly, the risk of a given portfolio is expected to be smaller than the weighted average of the risks of the several currency assets in that portfolio. These diversification incentives have played an important role in the growing volume of foreign exchange traded in the United States and elsewhere around the globe.

Tables 5 and 6 show the performance of five major currencies *vis-à-vis* the United States dollar in two recent periods, the first from April 1977 through the third quarter of 1979 and the second from October 1979 through March 1981. Judging from these calculations, it is obvious that holding different currencies on an uncovered basis may involve a high degree of risk since returns can change substantially over time with variations in interest rates and exchange rates. History provides little grounds for confidence in the expectation that differences in nominal interest yields will be compensated for by spot exchange rate changes. As the tables show, there are substantial differences across currencies in the annual average returns that were earned during each of the two periods.

The tables also present several multicurrency portfolios, constructed from the vantagepoint of a United States-based investor interested in dollar-denominated returns. The first two portfolios show the results of a passive investment strategy, with major currencies represented in proportion to their share in the total market capitalization of stocks and bonds in selected major industrial countries at the end of 1979. By choosing portfolios that represent the "market", the passive investment approach seeks to diversify away all risk except that associated with the market as a whole. This approach is advantageous for small investment trusts, pension funds, and other institutions that may wish to diversify internationally but lack sufficient research services and analysts to pursue an active investment program. By contrast, the last two portfolios contain various foreign currencies in equal amounts. Their performance indicates the sensitivity of overall portfolio returns to the mix of chosen assets under changing financial conditions. Portfolios that turned out to yield the highest return after October 1979 are those that did not include the mark as one of the selected currencies, while in the earlier period excluding the mark would have significantly lowered portfolio returns.

Two aspects of diversification are worth bearing in mind. Foreign investors, as well as domestic residents with funds initially allocated entirely to domestic currency assets, appear ready to respond not only to developments between the United States and foreign markets but to developments among nondollar currency centers as well. The growing number of currencies that have become attractive candidates for diversified portfolios has been a major boost to the expansion of foreign exchange market activity.

Second, with considerable attention focusing on official reserve diversification, the importance of private-sector shifts of funds is frequently underrated. Indeed, there is little question that private portfolios around the world are losing their exclusively domestic character as businesses, investment trusts, and individuals diversify the currency denomination of their money, bond, and equity portfolios. Divergent returns among various domestic monies and among the world's major stock and bond markets have made it possible to improve portfolio earnings without an increase in risk and to protect financial assets in an unsatisfactory investment climate from the loss of real purchasing power. Moreover, private asset managers are generally quick to adjust the currency composition of their portfolios to changes in the relative risks and expected returns that they perceive, while there is reason to believe that official portfolio shifts may be less abrupt and may involve a longer term transition to a desired mix of currencies. Therefore the availability and movement of internationally switchable funds, which have played an important part in the growth of the foreign exchange markets, should be seen even more as the response of private market participants than of official institutions to high exchange risk and to an otherwise volatile financial environment.

[4] Active hedging practices may have led corporate treasurers to use the forward market more intensively. Forward contracts may be closed out at any time prior to maturity and may therefore be easier to reverse than some alternative combination of spot and money market transactions. In the March 1980 survey, nonfinancial institutions transacted about 61 percent of their exchange business through outright forwards and swaps and the remainder in the spot market. Unfortunately, the data do not permit a comparison with the 1977 survey.

Table 5

Average Return and Risk of Selected Currencies

April 1977 through September 1979*

Currency	Average annualized exchange rate change	Interest rate return	Total average annualized return	Standard deviation of total return
United States dollar		7.37	7.37	1.73
German mark	11.18	4.07	15.25	23.84
French franc	6.65	8.27	14.91	19.98
Japanese yen	8.77	4.92	13.69	35.49
Sterling	10.15	7.75	17.90	25.57
Canadian dollar	— 4.22	8.61	4.40	15.03
Portfolio I†	3.50	6.72	10.21	8.60
Portfolio II‡	7.95	5.92	13.86	20.26
Portfolio III§	6.51	6.72	13.23	15.36
Portfolio IV‖	5.34	7.39	12.72	14.61

Table 6

Average Return and Risk of Selected Currencies

October 1979 through March 1981*

Currency	Average annualized exchange rate change	Interest rate return	Total average annualized return	Standard deviation of total return
United States dollar		12.08	12.08	2.48
German mark	—12.18	9.12	— 3.06	34.01
French franc	—12.80	11.71	— 1.09	32.94
Japanese yen	1.29	9.66	10.95	44.67
Sterling	— 0.19	13.65	13.46	30.75
Canadian dollar	— 1.42	13.02	11.60	11.21
Portfolio I†	— 1.46	11.51	10.16	12.14
Portfolio II‡	— 3.36	10.79	7.54	29.35
Portfolio III§	— 5.06	11.43	6.47	25.41
Portfolio IV‖	— 3.28	12.01	8.82	24.71

* Exchange rate changes are based on the monthly average of daily exchange rate changes. Interest rate returns are based on the monthly average of selected short-term rates in national markets for all currencies except the dollar. Interest returns on the dollar reflect the monthly average of daily yields on three-month United States Treasury bills. Source: International Monetary Fund, *International Financial Statistics*, and Morgan Guaranty, *World Financial Markets*.

† Portfolio I consists of 56 percent of dollars, 18 percent of yen, 10 percent of marks, 8 percent of sterling, 5 percent of Canadian dollars, and 3 percent of French francs.

‡ Portfolio II consists of 41 percent of yen, 22 percent of marks, 18 percent of sterling, 11 percent of Canadian dollars, and 8 percent of French francs.

§ Portfolio III consists of 20 percent each of German marks, French francs, Japanese yen, pound sterling, and Canadian dollars.

‖ Portfolio IV consists of 25 percent each of French francs, Japanese yen, pound sterling, and Canadian dollars.

Foreign currency futures

Foreign currency futures have become a popular alternative to traditional financial instruments for individual investors seeking to maintain or improve upon the real value of their assets. Foreign currency futures offer the prospect of large exchange gains, while the possibility of setting foreign exchange losses against ordinary income may also motivate some investors seeking to protect their aftertax income from higher, inflation-induced tax rates. Individual investors may constitute a larger class of transactor on the futures market than other participants, such as small corporations or commodities trading firms. Because commercial banks are reluctant to deal with parties not having recognized commercial or financial transactions, individuals have few other opportunities to speculate in foreign exchange. Even individuals with access to the interbank exchange market may find that the costs of transacting business are sometimes quite high. By contrast, there is considerable scope for leveraging positions with modest capital outlays on the futures exchanges, such as the International Monetary Market of the Chicago Mercantile Exchange (IMM) where most currency futures are traded.

IMM orders, which customarily enter the interbank market through the arbitrage activities of a special class of IMM clearing member, represent a fast growing and important source of foreign exchange activity in the United States. Such activity accounted directly in the March 1980 survey for 15 percent of commercial banks' total customer business (spot, swap, and forward) and fully 35 percent of banks' customer business done in the forward market. But these numbers understate the impact of the IMM on the interbank market in at least two respects. Direct arbitrage by commercial banks, which initiate IMM trades through floor brokers and then lay off these positions in the interbank market, has increased as banks have begun using their trading expertise actively to exploit the profit potential between the IMM futures and the interbank forward market. Moreover, banks writing forward contracts with IMM arbitragers typically cover their currency risk through offsetting purchases or sales in the spot market and their maturity risk through a series of swaps. Like regular customer orders, IMM orders thus set in motion multiple transactions in the interbank market.

Innovation in foreign exchange dealing relationships

Market mechanisms in the United States, developed when exchange rates were fixed and the need for foreign exchange services in the United States was far smaller, came naturally under increasing strains with the rapid expansion in foreign exchange demands and far-reaching disturbances to the global economy. Over time, the need to respond quickly to rapidly moving events put a premium on mechanisms which were swift and efficient and challenged the adequacy of traditional dealing relationships. In 1978, after several years of debate, banks and brokers in the United States introduced three major changes in market practice.

- Foreign exchange trading banks, rather than doing business among themselves almost exclusively through the intermediation of United States foreign exchange brokers, began dealing directly with each other at home and using international brokers not domiciled in the United States when dealing abroad.

- Foreign exchange brokers located in the United States began to broker internationally, accepting bids and offers from banks located abroad.

- Exchange rate quotations for currencies other than the pound sterling shifted from United States terms, that is, dollars and cents per unit of foreign currency, to European terms, that is, foreign currency units per United States dollar.

These changes facilitated the expansion of foreign exchange trading by eliminating conventions that had come to discourage full participation in the market and by integrating the United States market more closely with markets overseas.

Previously, banks in the United States would deal either directly with banks abroad or through the local brokerage system. There was little direct bank-to-bank trading in the United States market. Under this system, traders were not always assured of getting up-to-date market information and the freshest bids and offers. This disadvantage was particularly acute for banks lacking widespread name recognition or a sizable customer and correspondent base and consequently not in a good position to establish direct dealing relationships with the broader and more active European market. The high cost of telex and telephone communications linking New York to Europe also deterred many banks from direct dealing abroad. Direct dealing with foreign banks was therefore limited to banks with broad foreign exchange trading relationships and with management support for a reasonably large trading operation.

Before 1978, therefore, United States brokers frequently found it difficult to locate willing buyers and sellers since a relatively small number of banks trading direct overseas accounted for the bulk of foreign exchange turnover. Direct dealing accounted for about

70 percent of spot turnover in the United States in the April 1977 foreign exchange survey, after adjusting for double counting of transactions between United States banks (Table 7). By the same token, a number of banks —not sure of being able to do business in the brokers market but equipped to handle foreign exchange transactions for their customers—looked instead to larger correspondent banks to execute their orders.

While the rigidities implied by conventional dealing relationships had their greatest impact on the local brokers market, even banks dealing direct abroad were affected. When, for example, business was heavily concentrated in the foreign brokers market, information on bids and offers could be acquired only with certain delays. The extra search time involved in getting business done and the dangers of being stuck with positions that could not be unwound quickly or on acceptable terms became serious issues as the market grew in complexity and as exchange rate movements picked up momentum.

Direct dealing between United States names has helped overcome many of these problems. Direct dealing banks can expect each other to provide fresh rate quotations for marketable amounts in a spirit of reciprocity. To be sure, differences in bank size and expertise in various currencies will influence the cost of reciprocity and also the readiness of individual banks to deal direct. However, banks accepting these mutual obligations find that they can execute transactions at almost any time during the business day and have greater flexibility in handling large or odd-dated customer orders not readily suited to the brokers market. These capabilities have added depth to the market and have enlarged transactions volumes through more regular participants.

For their part, now that United States brokers have communications links to Europe, they are able to collect bids and offers provided by a large number of European, Middle Eastern, and Far Eastern banks and to pass these on to traders in New York and in other United States cities either by phone calls or in many cases over speakerphones. The ability to deal through the brokers on a competitive basis by receiving fresh and timely prices has provided additional impetus for regional and comparatively small United States banks to set up foreign exchange trading departments and for established trading rooms to expand their operations. With more and more banks willing to deal through the brokers, the market has gained liquidity, *i.e.,* participants can get more business done without affecting the prevailing price. Also, brokers can and frequently do provide the best international bid and offer. The advantage to the banks is that the broker's commission may at times be smaller than the cost of the spread when dealing direct. Because commission arrangements now include the granting of discounts with increasing business volumes, there are also benefits to dealing through the brokers in size. Further, the savings in staff, equipment, and time that otherwise would be required to stay in contact with the growing number of banks that trade foreign exchange provide still another inducement to trading through the brokers. For all these reasons, use of the brokers has increased dramatically, in large part at the expense of direct dealing overseas. In the March 1980 survey, transactions through brokers accounted for more than 50 percent of the sample's spot foreign exchange business, compared with about 30 percent in 1977 (Table 7).

Table 7

United States Foreign Exchange Turnover by Type of Dealing

As a percentage of spot turnover in the interbank market*

Type of dealing	Direct dealing		Brokered dealing	
	April 1977	March 1980	April 1977	March 1980
Between United States banks	†	14	27	20
Between banks in the United States and banks abroad	73	34	†	32
Total	73	48	27	52

* Based on gross spot currency transactions of ninety and forty-four banking institutions, respectively, in March 1980 and April 1977, after adjusting for double counting of transactions between banks located in the United States.

† Negligible.

With the shift to European terms, United States dealers began using the same pricing convention as that employed elsewhere, in effect adopting the terminology of other markets for the sake of greater efficiency. The decision was not made lightly since the question of how dealers quote prices involves the language of the marketplace and is therefore a matter of identity and tradition as well as of technical convenience. But, whatever the initial concerns, the use of European terms has made it easier to trade with other markets by removing a source of potential confusion in communications and by cutting down on the time needed to execute individual transactions.

In sum, direct dealing between United States names, international brokering, and the switch to European terms as a common standard for quoting rates have

improved the functioning of the United States foreign exchange market. With information disseminated rapidly and completely and with traders readily able to buy and sell at current and uniformly quoted prices, the market is both more efficient and more liquid than before.

Concluding remarks

The upsurge of foreign exchange trading in the United States has occurred essentially in response to the increasing volatility of exchange rates and to the internationalization of the United States exchange market and its fuller integration with the global foreign exchange market. So long as the international economy continues to experience high and variable inflation, major current account imbalances, divergent monetary and fiscal policies, and other factors recognized as contributing fundamentally to exchange rate instability, the challenge of heightened exchange rate volatility is likely to persist.

Meanwhile, barriers to the movement of trade and capital notwithstanding, national economies are becoming more interdependent, broadening further the scope for sophisticated foreign exchange management by a variety of institutions and individuals. Active hedging policies and the development of multicurrency-denominated asset (and liability) portfolios are still on a relatively limited scale. Yet the incentives to move further in this direction are strong, in an environment of variable inflation and exchange rate volatility, and the opportunities to do so are growing, with the development of new financial instruments and the opening-up of national financial markets around the world. The sheer size of the United States money and capital markets, unparalleled innovations within and among those markets, and the growing sensitivity of investors and borrowers to expected exchange rate changes as an important component of the yield or cost of financial assets all suggest that the scope for additional private-sector participation in the United States foreign exchange market is substantial.

But also, working in the opposite direction, are some factors suggesting a somewhat more moderate pace of growth in the years ahead. There are limits to the expansion of intraday spot trading by market professionals in terms of transaction costs, payment errors, and settlement risk. And, in the absence of a well-developed foreign currency deposit market in the United States or in neighboring offshore markets, there are also natural limits to the expansion of swap trading. These considerations make it doubtful that interbank positioning will continue in the future to play as paramount a role in boosting trading volumes as in the past. At the same time, most foreign banks with an interest in locating in the United States have already done so, while the centralization of exchange risk management at United States corporate headquarters is by now already well-developed. In many countries abroad, restrictions on foreign exchange trading have also begun to ease. Moreover, international brokering and direct dealing among United States names, while facilitating the expansion of foreign exchange business and making it possible for the United States market to become more fully integrated with markets overseas, are by their nature structural changes whose impact on volume growth can be expected to dwindle over time. Therefore, while there are good reasons to expect continued growth of the United States foreign exchange market, the likelihood is that the future expansion of the market will be less than the very rapid pace of recent years.

Patricia A. Revey

February-July 1981 Semiannual Report
(This report was issued to the Congress, and to the press on Thursday, September 3, 1981.)

Treasury and Federal Reserve Foreign Exchange Operations

The United States dollar advanced strongly against all currencies during the period under review in response to a variety of economic and political factors in the United States and abroad. In the United States, the current account remained in surplus. The domestic economy showed considerable resilience. The demand for money and credit continued strong, and United States interest rates remained high. Also, price indexes published during the period pointed to a significant decline in the inflation rate. Moreover, the already favorable market sentiment toward the Reagan administration was strengthened by its apparent resolve and effectiveness in translating from plan to action its major fiscal program designed to deal with inflation while revitalizing the United States economy.

The performance of major industrial countries abroad was less favorable. The current accounts of several countries, notably Germany, were in substantial deficit. Inflation was accelerating in most countries other than Japan. Economic activity abroad was generally sluggish. In many countries, the weakness of domestic demand was seen in the markets as constraining the authorities from raising interest rates sufficiently to attract capital inflows for financing current account deficits at prevailing exchange rates or to curb inflation. Market participants focused on the policy challenges facing many governments abroad and were concerned that policies would not be adopted to deal with these problems effectively. Moreover, political developments in Eastern Europe and in the Middle East added to uncertainties for the outlook, especially for Europe, and left traders and investors with the view that the United States was a relatively attractive outlet for investment.

In this environment, the market perceived little downside risk for the dollar in the exchange markets. Consequently, the dollar fluctuated higher over most of the period under review. Early in February, the selling pressures against other currencies focused mostly on the German mark, which not only declined against the dollar but also was weak within the joint float arrangement of the European Monetary System (EMS). After midmonth, the Bundesbank took strong action to defend the mark, and before long increases in short-term interest rates in Germany were followed by rising interest rates in many other financial markets on the Continent. At the same time, interest rates in the United States eased somewhat. As market participants moved to cover short currency positions, the mark rebounded and other currencies also strengthened by mid-March.

From April to mid-May, there was renewed upward pressure on short-term United States interest rates and the dollar resumed its advance. By midspring this tendency was reinforced, as the markets attempted to assess the implications of renewed

A report by Sam Y. Cross. Mr. Cross is Senior Vice President in charge of the Foreign Group of the Federal Reserve Bank of New York and Manager of Foreign Operations for the System Open Market Account.

unrest in Poland, the change of government in France, and political developments in several other European countries. Moreover, United States statistics for the first quarter highlighted the unexpected strength of the domestic economy. As market participants began to adjust their expectations concerning the near-term outlook for the economy and for interest rates, the dollar advanced strongly.

Coming into the summer, market participants took an increasingly bearish view of the outlook for Europe. A debate over monetary and exchange rate policies had emerged in the press, intensifying with the approach of the July 19-20 Ottawa summit. Market participants focused on complaints by foreign governments that the high level of United States interest rates was complicating their efforts to encourage economic recovery and to avoid further depreciations of their currencies. At the same time, evidence suggested that the United States economy had lost its upward momentum. Inflation figures continued to show improvement, while the growth of the narrow monetary aggregates had moderated. Expectations developed that United States interest rates might ease from their near-record highs. In these circumstances, the dollar remained in demand but fluctuated more irregularly than before.

After mid-July the demand for credit in the United States was stubbornly strong in the face of high interest rates and the broader monetary aggregates continued to be buoyant. The market was impressed by Chairman Volcker's reaffirmation of the Federal Reserve's commitment to restrain monetary expansion. In addition, the market was becoming concerned about the impact of the United States government's near-term financing requirements on United States financial markets. In this environment, interest rates remained high, disappointing expectations of near-term declines. Moreover, as the Administration's economic proposals gained Congressional approval, market participants compared the breadth of support for the new policy directions in the United States with the continuing debates on a full range of policies in many countries abroad. As a result, market sentiment toward the dollar became bullish. The dollar closed the period, advancing strongly across the board. The extent to which the exchange rates for individual currencies moved against the dollar depended in large part on economic and political factors in their respective countries. But, overall, the dollar ended the period up 22¼ percent against sterling, up 16½ percent against the Japanese yen, and up 16¼ percent against the German mark.

In their operations in the exchange market, the United States authorities intervened to settle a volatile market on nine trading days in February, when the dollar was rising sharply. The equivalent of $610.0 million net of marks was purchased in the market and an additional $168.4 million of marks was bought from correspondents. The proceeds of these market and correspondent purchases were split evenly between the Federal Reserve and the Treasury and were added to their respective balances.

On March 30, when trading in the exchange markets faltered amidst the uncertainties following the assassination attempt on President Reagan, the Trading Desk intervened to reassure the markets. A total of $74.4 million equivalent in marks was sold from balances, again split evenly between the Federal Reserve and the Treasury. On the following day, exchange markets quickly returned to more orderly conditions.

The Treasury indicated in April that, after study and consultation with officials of the Federal Reserve, the United States had adopted a minimal intervention approach to intervene only when necessary to counter conditions of disorder in the exchange market. On May 4, Treasury Under Secretary Sprinkel set forth the rationale for this approach in testimony before the Joint Economic Committee of the Congress.

The United States did not intervene on its own account through the remainder of the period under review. The Trading Desk continued to cooperate with other central banks by intervening as their agent from time to time in the New York market. Over the six-month period, such operations were conducted in German marks, French francs, Japanese yen, and the Canadian dollar. In their own markets, central banks of other countries continued to intervene, operating heavily at times, mostly to limit the decline of their currencies against the dollar.

In April, the Swedish Riksbank repaid, prior to maturity, the $200 million drawn in January under the swap arrangement with the Federal Reserve, following a heavy reflow of funds into the Swedish krona. In May a $200 million increase in the arrangement that had been agreed upon for one year lapsed and the swap line reverted to the earlier $300 million amount.

On July 27 the United States Treasury paid off the first maturing tranche equivalent to $744.5 million of its Swiss franc-denominated securities. These securities were issued with the cooperation of the Swiss authorities in connection with the dollar-support program of November 1978. After this redemption the Treasury had outstanding $5,692.1 million equivalent of foreign currency notes, public series, of which $5,233.6 million is denominated in German marks and $458.5 million is denominated in Swiss francs. These securities mature between September 1, 1981 and July 26, 1983.

Table 1

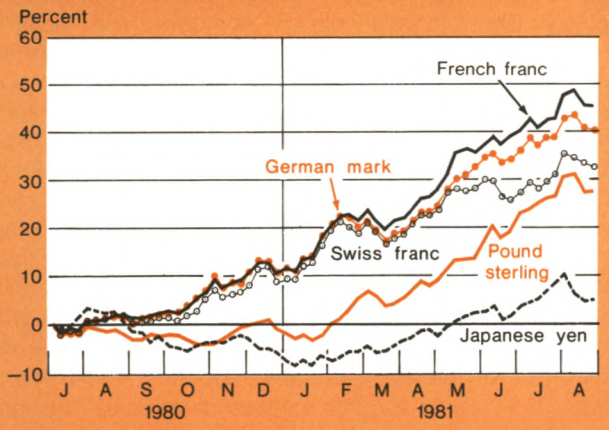
Federal Reserve Reciprocal Currency Arrangements

In millions of dollars

Institution	Amount of facility January 1, 1981	Decrease effective May 23, 1981	Amount of facility July 31, 1981
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	500	200	300
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
Total	30,300	200	30,100

Chart 1

The Dollar Against Selected Foreign Currencies

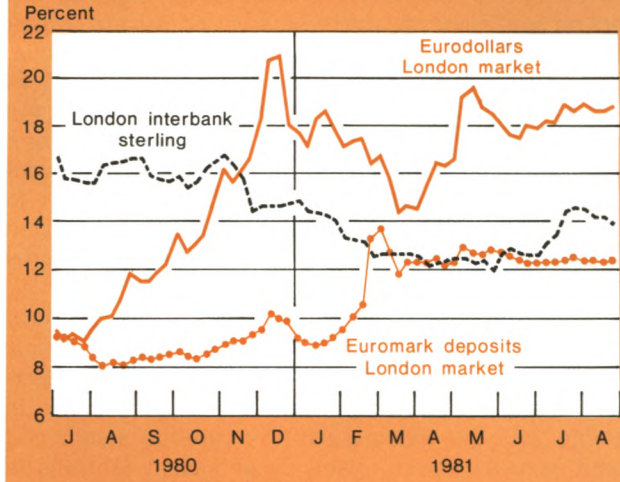


Percentage change of weekly averages of bid rates for dollars from the average rate for the week of June 30-July 6, 1980. Figures calculated from New York noon quotations.

Chart 2

Selected Interest Rates

Three-month maturities *



* Weekly averages of daily rates.

In the seven months through July 1981, the Federal Reserve had gains of $4.9 million on its exchange market operations, while the Exchange Stabilization Fund lost $4.5 million. The Treasury's general account lost $82.7 million, reflecting losses of $144.3 million as a result of annual renewals at current market rates of the agreement to warehouse with the Federal Reserve Swiss franc proceeds of Treasury securities and gains of $61.6 million on the reacquisition of Swiss francs in connection with the redemption at maturity of Swiss franc-denominated securities. As of July 31, valuation losses on outstanding balances were $571.1 million for the Federal Reserve and $1,807.2 million for the Exchange Stabilization Fund. The Treasury's general account had valuation gains of $1,313.5 million related to outstanding issues of securities denominated in foreign currencies.

German mark

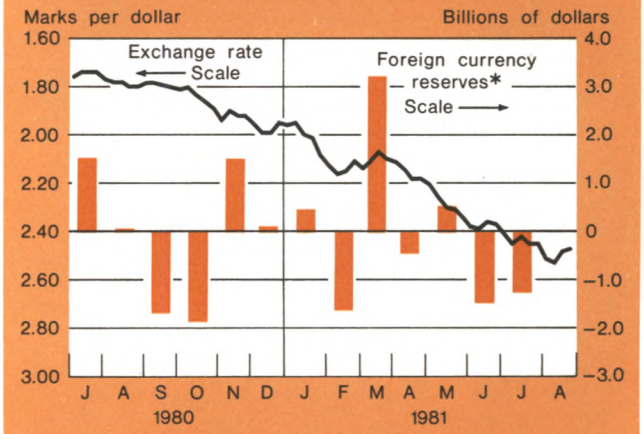
Early in 1981 Germany's current account deficit showed no signs of contracting despite continued stagnation of the domestic economy. Though import demand had weakened and export orders had picked up from earlier depressed levels, these initial improvements were more than offset by the adverse impact on Germany's terms of trade of the sharp depreciation of the mark. At the same time, growing tourism, interest, and dividend payments led to a further deterioration in services. The authorities had hoped to correct the current account deficit gradually by a shift of resources toward investment and exports and, in the interim, to finance the deficit by a combination of private and official capital inflows. But the protracted nature of the deficit exerted a negative impact on sentiment toward the mark, and private capital flowed heavily out of Germany instead. Meanwhile, domestic demand remained exceptionally weak. Central bank money was growing in the upper half of the 4-7 percent annual growth range, and short-term domestic interest rates at 9 percent were the subject of domestic debate—criticized for being too high to permit a recovery of domestic economic activity but too low to defend the mark from downward pressures in the exchange market.

By February the outflow of funds from Germany accelerated sharply. Market participants were deeply concerned about the lack of resolution within Germany over the appropriate role for monetary policy in dealing with the weakness of the external sector and about security issues raised by persistent tensions in Poland. At the same time, there was growing confidence in the policies and leadership of the new United States administration under President Reagan, which had already established a clear direction for the United

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.

States in economic and military matters. With interest rates in Germany relatively low compared with those in the United States and some other industrial countries, funds flowed heavily out of marks, principally into dollar assets but also into sterling and higher yielding currencies of the EMS. By midmonth the mark had plummeted to DM 2.25 against the dollar for a decline of 5½ percent from end-January levels and some 20 percent from the previous September. Within the EMS the mark was trading at or near the floor of the joint float *vis-à-vis* the French franc. The Bundesbank intervened in dollars and, together with the Bank of France, also in French francs to preserve the limits of the EMS. Largely reflecting these operations, Germany's foreign exchange reserves declined to $42.7 billion at end-February, down $1.7 billion from the level outstanding on January 31. Meanwhile, during February the United States authorities intervened to settle trading conditions which were frequently one way. The authorities bought $610.0 million equivalent of marks net in the market and $168.4 million

equivalent from correspondents which were added to balances of the Federal Reserve and the United States Treasury.

The sharp and prolonged decline of the mark posed serious problems for the German authorities. The depreciating mark boosted domestic currency prices of oil and other dollar-invoiced imports relative to export prices, thus magnifying the current account deficit. The rising cost of imports fed directly into domestic producer and consumer prices ahead of important spring wage negotiations and thereby threatened to provoke new domestic cost pressures. The mark's decline also complicated efforts to finance the external deficit and generated some uneasiness on the part of official mark holders. On February 19 the Bundesbank temporarily closed the Lombard window, suspended the traditional fixed-rate facility, and announced that Lombard credits would henceforth be made available at its discretion and at rates determined on a day-to-day basis. Bundesbank President Poehl stated that the immediate aim of these measures was to tighten German monetary policy in order to safeguard the stability of the mark. Thereafter, German short-term interest rates shot up and call money temporarily reached 20-30 percent before settling back to trade around 12-13 percent.

Exchange market participants reacted positively to the tightening of German monetary policy. As interest differentials adverse to the mark either narrowed sharply or disappeared completely, previously adverse commercial leads and lags were unwound and nonresidents repaid earlier mark-denominated borrowings. This reflow of short-term funds into marks, principally out of French and Belgian francs, strengthened the mark dramatically within the EMS, and the mark traded after mid-February at the top of the joint float arrangement. The Bundesbank was therefore able to begin purchasing EMS currencies in the market to repay debt to the FECOM (European Fund for Monetary Cooperation), incurred earlier while the mark was at the bottom of the EMS. Meanwhile, with United States interest rates also coming off near record highs, the mark rebounded against the dollar to trade around DM 2.09-2.12 through early April. For their part the United States authorities limited their intervention to one occasion, on March 30, following the assassination attempt on President Reagan, when they sold $74.4 million equivalent of marks out of balances.

During the spring the Bundesbank maintained its essentially restrictive monetary policy stance. Officials stated that there was no basic conflict between internal and external policy considerations. Short-term stimulus to the economy, whatever the temporary benefits to growth, would be counterproductive since it would increase domestic consumption and inflation at the expense of longer term needs such as capital formation, efficient economic decision making, and productivity gains. The authorities therefore kept a tight rein on liquidity mainly through open market operations and foreign currency swaps. These operations convinced exchange market participants that the Bundesbank would not allow interest rates to ease. But the occasionally highly charged domestic debate over monetary policy also suggested that the authorities would not be in a position to increase short-term interest rates in the face of continued recession and substantial unemployment.

Meanwhile, in the United States, demands for money and credit pressed against a restrained supply of bank reserves and exerted upward pressure on short-term United States interest rates from April through mid-June. The rise in United States interest rates was not matched by increases in German money market rates, so that interest differentials adverse to the mark widened from 2 percent in March to 6 percent by early June. In the credit markets, however, yields on German bonds increased by more than yields in the United States. These pressures on the German bond market spilled over into the exchanges, as foreigners liquidated some of their mark-denominated assets to limit capital losses. In these circumstances, the mark was again under downward pressure and had dropped to DM 2.25 before May 10, when Francois Mitterrand was elected President of France. Then a wave of French franc selling pulled the mark and other EMS currencies even lower in the exchanges. To maintain the intervention limits of the joint float, the Bundesbank along with the Bank of France sold large amounts of marks against French francs through end-May before tough French exchange controls helped bring the market into better balance. The Bundesbank also sold large amounts of dollars in the market to absorb part of the mark liquidity created by the EMS intervention and to moderate the steep fall of the mark against the dollar, which declined further to nearly DM 2.33 by the month end. Part of these dollar sales occurred through the agency of the Trading Desk at the Federal Reserve Bank of New York operating on behalf of the Bundesbank. However, the Desk did not intervene in the exchanges on behalf of the Federal Reserve or the United States Treasury.

In mid-June, selling pressures on the mark abated. By this time, United States economic activity had turned sluggish, inflation figures had improved, and growth of the monetary aggregates moderated. In these circumstances, United States interest rates had begun to soften and were widely expected to register sustained declines, thereby narrowing interest

differentials adverse to the mark. But the market had become increasingly pessimistic over the outlook for Europe. Major political and security issues were of concern, as underlined by persistent tensions in Poland and by new questions about the framework of Western European relations raised by changes in several governments. With respect to Germany, there were open disputes in Germany's governing coalition over a broad range of issues. Germany's trade figures had not yet shown much evidence of improved competitiveness resulting from the substantial real depreciation of the mark. Consumer price inflation was also accelerating, and there was little prospect for a near-term reduction of price pressures, given the rise in labor compensation negotiated in the spring.

With these various concerns depressing sentiment toward the mark, the German currency weakened still further against the dollar in late June and July, when United States interest rates firmed up rather than declining as expected. Continued bearish sentiment toward the mark also hampered progress in financing the current account. For several months, long-term private capital had remained in deficit, although the pace of net outflows had slowed. By June the previous inflow of short-term capital was being reversed. Partly for this reason the Bundesbank announced that German interest rates would remain high and that the growth of central bank money would be held in the lower half of the annual target range. At the same time, the federal government continued to borrow heavily abroad in order to finance the sizable current account deficit, amounting to DM 29 billion at an annual rate in the first six months of the year. Between January and June the public authorities raised about DM 14 billion in foreign credits, with a large share coming directly from Saudi Arabia.

During July, as the exchange market focused on fiscal policy developments in Germany relative to those in the United States, the mark came more heavily on offer. In Germany, increasing government expenditures threatened to raise the public-sector deficit in 1981 to 4.5 percent of gross national product (GNP) from under 3 percent of GNP only two years earlier. Although containing the upward trend in

Table 2

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 Federal Reserve System	Outstanding January 1, 1981	1981 I	1981 II	1981 July	Outstanding July 31, 1981
Bank of Sweden	-0-	+200.0	−200.0	-0-	-0-

Data are on a value-date basis.

Table 3

United States Treasury Securities, Foreign Currency Denominated

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

Issues	Amount of commitments January 1, 1981	1981 I	1981 II	1981 July	Amount of commitments July 31, 1981
Public series:					
Germany	5,233.6	-0-	-0-	-0-	5,233.6
Switzerland	1,203.0	-0-	-0-	−744.5	458.5
Total	6,436.6	-0-	-0-	−744.5	5,692.1

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

spending had become a priority, measures to reduce expenditures in the 1982 budget were drafted in the midst of heated public debate, raising some questions whether the final budget proposal would be approved by the Parliament. Meanwhile, the Reagan administration gained Congressional support for major expenditure cuts and tax reductions, marking an important shift in fiscal policy that was aimed at reducing inflation and providing greater incentives to the private sector. The exchange market assessed the new direction of United States fiscal policy favorably. There were still concerns that defense outlays and tax cuts might in combination swell rather than reduce the budget deficit. But growing confidence that the Federal Reserve would keep the growth of bank reserves and the monetary aggregates under firm control helped alleviate inflationary fears and also reinforced expectations that United States interest rates would remain high. The market's generally positive reaction to the Reagan administration's economic program, coupled with the attraction of high yields on dollar placements, led to a surge of dollar bidding during July. In these circumstances, the mark dropped sharply lower in frequently heavy trading to DM 2.4770 by the month end for a net 16½ percent decline over the six months under review. Meanwhile, Germany's foreign exchange reserves increased $647 million from February levels to stand at $43.4 billion on July 31, 1981. The rise in reserves mainly reflected sizable intervention purchases of currencies within the EMS after March, mostly French francs but also Belgian francs, which offset intervention sales of dollars in the final months of the period.

Swiss franc

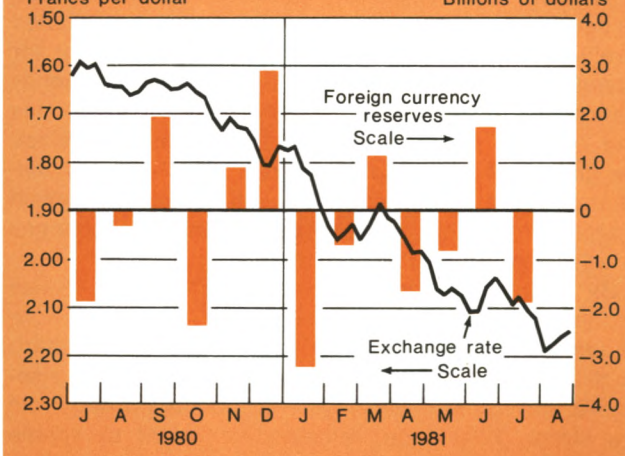
Coming into 1981 the Swiss economy was continuing to show greater momentum than those of most other industrialized countries. At the same time, the pace of consumer price increases had accelerated sharply in response to resilient consumption demand and to the progressive decline in the Swiss franc during much of 1980. The Swiss authorities were anxious to combat these emerging inflationary pressures while mindful of the risks of precipitating a downturn for Switzerland in view of the sluggishness of the international economy. As a result, the Swiss National Bank announced it would leave its monetary base growth target for 1981 unchanged from that of 1980 at 4 percent.

At that time, interest rates in Switzerland were well below those in all other major industrial countries, and the differential *vis-à-vis* the United States had again widened to 10 percentage points. In response, many corporate entities, governments, and other official agencies borrowed francs domestically or in the Euro-

Chart 4

Switzerland

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

Swiss franc market, where many borrowers had options allowing them to switch loan currency denominations on rollover dates. In addition, with developments in Eastern Europe seen in the market as casting a cloud over all the Continent, the Swiss franc had lost some of its traditional attraction as a refuge for capital. As a result, inflows of funds were insufficient to offset the buildup of interest-sensitive capital outflows, and during January the Swiss franc continued to weaken both against the dollar and other European currencies. By the beginning of the period, the Swiss franc had declined about 16 percent from its 1980 highs to a three-year low of SF 1.9270 against the dollar and was trading at SF 0.90 against the German mark. Swiss foreign exchange reserves stood at $12.1 billion.

On February 3 the National Bank of Switzerland raised its discount and Lombard rates ½ percentage point to 3½ percent and 4½ percent, respectively, the first change in these rates in nearly a year. The actions were taken to support the franc in the exchanges and to adjust official rates to tightening domestic money market conditions. But interest rate differentials unfavorable to the Swiss franc remained wide, and the franc continued to decline against a generally strengthening dollar. As the franc eased, the National Bank sold dollars to support the rate but operated in more modest amounts than many other central banks.

Following a change in the administration of Germany's Lombard facility, which precipitated a sharp rise in German money market interest rates, the Swiss National Bank announced a second round of interest rate increases. On February 20 the discount and Lombard rates were raised to 4 percent and 5½ percent, respectively, and the National Bank also conducted foreign currency swap operations—its major tool for monetary control—so as to tighten further money market conditions. By mid-March, money market rates had risen to about 9 percent, levels not seen since the mid-1970s. Also, dollar interest rates eased somewhat and the adverse interest differentials narrowed sharply, helping the franc strengthen in the exchanges to a level of SF 1.8530 on March 18.

By this time it had become clear that the Swiss economy, rather than weakening as expected, continued to expand in the first quarter of 1981, in sharp contrast to the sluggishness in Germany and elsewhere. Increases in employment, though slowing from the strong 1980 pace, remained sufficient to enable Switzerland to avoid the rising unemployment so troublesome to many industrial nations. Domestic consumption and construction activity had remained buoyant even in the face of mortgage rates which soared to levels not seen since 1975. These pressures had contributed to an acceleration of the inflation rate to about 6 percent which, though high by historical standards for Switzerland, was nevertheless still among the lowest rates in the world. In the United States the unexpected strength of the economy renewed monetary growth and put considerable upward pressure on dollar interest rates, which was sustained over the remainder of the period. As the dollar again came into demand, the franc fell in the exchanges.

With the economy robust, the Swiss authorities had leeway to pursue policies intended to push the inflation rate back down. Beginning in late April and continuing through May, the Swiss National Bank fostered tighter money market conditions by allowing liquidity-providing foreign currency swaps to run off. On May 11, the National Bank again raised the discount and Lombard rates, this time to 5 percent and 6½ percent, respectively, and shortly thereafter announced a willingness to see the monetary base fall below its annual target range. In response, Swiss interest rates moved even higher, including the politically sensitive mortgage interest rate and other long-term interest rates.

These developments coincided with the presidential elections in France and, as all European currencies initially dropped against the dollar, the Swiss franc fell further to a low of SF 2.0790, down 12 percent from its March highs. Thereafter, however, Switzerland came to be seen as a politically stable and economically sound investment outlet and the Swiss franc began to regain some of the status of a "safe haven" currency. In the context of this improving exchange market psychology, speculative and investment flows turned in favor of the franc. Funds also flowed in from Germany to repay franc borrowings, which had become nearly as expensive as mark credit. Through the end of June the franc firmed slightly against the dollar and climbed against the mark to SF 0.85, thus breaking out of the narrow range around SF 0.90 which had held for about two years.

Through July the franc declined against the dollar in line with other currencies and against the mark, mainly in response to growing market expectations of an EMS realignment that was thought likely to benefit the mark. By the end of the month the franc had declined to SF 2.15 against the dollar and to SF 0.87 against the mark, down about 11¾ percent against the dollar and up 4 percent against the mark for the six-month interval. For the period overall, Swiss foreign currency reserves fluctuated modestly, largely in response to foreign currency swap operations conducted to influence growth of the Swiss monetary base. At the close of the period, Swiss reserves stood at $9.9 billion, down $2.2 billion from the end of January.

On July 27 the United States Treasury redeemed the first maturing tranche of its Swiss franc-denominated securities in the amount of SF 1.2 billion issued in July 1979, with the cooperation of Swiss authorities in connection with the dollar-support program of November 1978. To neutralize the liquidity effects of the note transactions, the Swiss National Bank allowed a portion of maturing foreign currency swaps to run off, thereby absorbing liquidity injected by the retirement of the notes. As a result, the money markets remained generally steady over the month end.

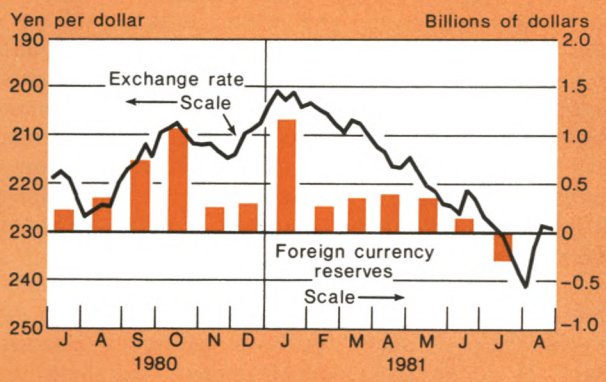
Japanese yen

Early in 1981 the yen continued to benefit in the exchanges from the rapid adjustment of Japan's economy to the second oil shock. Restrictive monetary and fiscal policies had successfully curtailed domestic demand, limited the buildup of inflationary expectations and, together with moderate wage settlements, contained the impact of oil price increases on domestic costs. At the same time, changes in production processes under way since the mid-1970s had made industry less dependent on imported raw materials, particularly oil. These developments, together with the impact of the 1979-80 depreciation of the yen, led to a marked improvement in the current account, which swung from deep deficit to virtual balance. They also impressed international investors sufficiently to attract

Chart 5

Japan

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

massive inflows of funds, particularly from Organization of Petroleum Exporting Countries (OPEC) investors eager to increase the share of yen-denominated assets in their portfolios. As a result, the yen rebounded in the exchanges to ¥ 206.10 in New York on January 31, up 21 percent against the dollar and 27 percent against the German mark from its lows of April 1980. The government proceeded to liberalize substantially exchange controls on international capital transactions. Also, Japan's foreign exchange reserves rose to $22.7 billion by end-January.

Meanwhile, however, domestic demand had stalled and, with the improvement in Japan's external position, the authorities had begun to relax the tight stance of policy after mid-1980. Yet, by early 1981, consumption and residential construction continued to falter and business fixed investment, previously the only domestic source of strength, was also decelerating rapidly. The growth of the monetary aggregates had slowed, and yen money market rates softened. Inflationary pressures had eased, partly reflecting the dampening impact on import prices of the yen's appreciation, so that wholesale price inflation had dropped from a year-on-year rate of 24 percent in the spring of 1980 to about 5 percent in early 1981. Meanwhile, in the exchange market the rising dollar had eroded the yen's earlier buoyancy, but the rate nonetheless remained relatively stable around ¥ 208 through mid-March. Against the currencies on the Continent, the yen held up relatively well even while those currencies benefited from a sharp rise in their interest rates. In these circumstances, domestic pressures on the authorities intensified during February and March to adopt reflationary measures including a reduction of interest rates.

On March 17 the government introduced a fiscal package which accelerated budgeted public-works expenditures and provided low-cost financing to promote housing construction, to aid small companies, and to boost exports of industrial plants. These measures were generally thought to be modest so as not to compromise materially the goals of reducing the budget deficit in the fiscal year ending March 1982 and of easing the burden on the markets of financing the central government's large requirement. At the same time, the Bank of Japan lowered its discount rate 1 percentage point to 6¼ percent for the third cut in less than a year, reduced banks' reserve requirements, and then followed up by substantially relaxing window-guidance ceilings on the growth of bank lending.

But the authorities were also concerned that the large interest differentials adverse to the yen might trigger volatile capital outflows. Japan's interest rates were the lowest among the major industrial countries. The liberalization of Japanese exchange controls also provided greater opportunities for capital outflows. Among other things, the Bank of Japan introduced a new lending arrangement similar to the special Lombard facility in Germany, enabling the central bank to charge more than the official discount rate on its lending to commercial banks whenever necessary to counter potentially excessive capital outflows or downward pressures on the yen.

In the event, sentiment toward the yen in the exchanges turned more cautious during the spring. Though market participants were still confident in the thrust of Japan's economic policies and the overall performance of the economy, there were reasons to question whether the rapid improvement in the current account would continue. The likelihood of trade restrictions against Japan's automobile exports dimmed prospects for future export earnings, as did self-imposed export restraints by Japanese manufacturers in industries faced with growing protectionist sentiment abroad. Spreading recession in major overseas markets clouded export prospects even further. Consequently, the trade surplus was thought unlikely to widen sufficiently to cover rising interest payments on non-resident yen deposits and tourism outflows which were significantly boosting Japan's traditional services deficit.

In these circumstances, large interest differentials adverse to yen-denominated assets began to show through. Japanese resident institutions and individuals —already in the process of adjusting to newly liberalized foreign exchange controls—stepped up their ex-

port of capital as interest differentials favoring the dollar widened from about 7 percentage points in March to over 11 percentage points in May and early June. In particular, life insurance companies, pension funds, and bank trusts took advantage of access to overseas investments by establishing a presence in the United States capital markets at yields more attractive than those available in Japan. As a result, the yen declined along with other major foreign currencies against the dollar, dropping 7¾ percent from mid-March levels to ¥ 224 by early June.

These developments put pressure on Japan's capital markets, complicating the authorities' efforts to bolster domestic growth and to finance the large government deficit at current yields. The authorities were concerned that raising the national bond coupon, a key indicator of overall long-term interest rates in Japan, would lead to higher lending rates throughout the economy. Reluctant therefore to increase new issue rates as rates in the secondary market rose, the government had difficulty arranging the June issue of ten-year bonds and had to withdraw the July issue altogether. In the exchange market, concern developed that these strains in the capital market would spill over into the currency markets, as foreign investors decelerated their purchases of Japanese assets or even began selling off some of their holdings. Moreover, the growing perception that the authorities would find it difficult to support the yen by raising Japanese interest rates contributed to a further decline in the yen to ¥ 228 by end-June.

Table 4

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	United States Treasury: General account
First quarter 1981	+ 6.2	− 0.7	−144.3
Second quarter 1981	− 1.4	− 3.8	-0-
July 1981	+ 0.1	-0-	+ 61.6
Valuation profits and losses on outstanding assets and liabilities as of July 31, 1981	−571.1	−1,807.2	+1,313.5

Data are on a value-date basis.

These pressures against the yen intensified considerably during July, as the long-awaited decline in United States interest rates failed to materialize. With little prospect that large interest differentials adverse to the yen would narrow and that the currency would soon rebound against the dollar, a broad range of participants accelerated their sales of yen in an effort to limit losses. At the same time, foreign corporations stepped up short-term yen borrowings to meet financing needs in other currencies, while commercial leads and lags also shifted against the yen. As the flow of funds gathered force, the decline of the yen began to outpace the fall of the European currencies against the rapidly strengthening dollar.

To cushion the yen's decline, the Bank of Japan intervened in Tokyo substantially on occasion and in New York through this Bank as agent. However, Bank of Japan Governor Mayekawa explained that, while intervening to smooth erratic rate movements, the Bank of Japan did not consider it necessary to adopt exceptional measures to stop the yen's slide. The authorities asserted in numerous public statements that the yen had depreciated by more than was justified in terms of economic fundamentals and was therefore likely to move back up over time. Consumer price inflation was abating rapidly and, given the moderate outcome of the wage round negotiated in the spring, could be expected to remain the lowest among the major industrial countries. Meanwhile, exports were proving stronger than earlier anticipated, despite negotiated export restrictions and were contributing to a modest surplus on the current account. The authorities also noted that short-term bank flows were still positive, even while Japan's long-term capital account had moved into deficit. This result largely reflected the fact that the covered cost of borrowing dollars was often less than local yen financing, creating incentives for both Japanese banks and nonbanks to borrow abroad.

But, in the exchange market, the yen continued dropping sharply to close at ¥ 240.35 on July 31, down 16¾ percent against the dollar over the six-month period under review but unchanged against the German mark on balance. Exchange market intervention by the authorities contributed to a $278 million decline in Japan's foreign exchange reserves during July. Nonetheless, at end-July Japan's reserves stood at $23.9 billion, up $1.2 billion on balance, mostly reflecting interest receipts on Japan's reserve holdings.

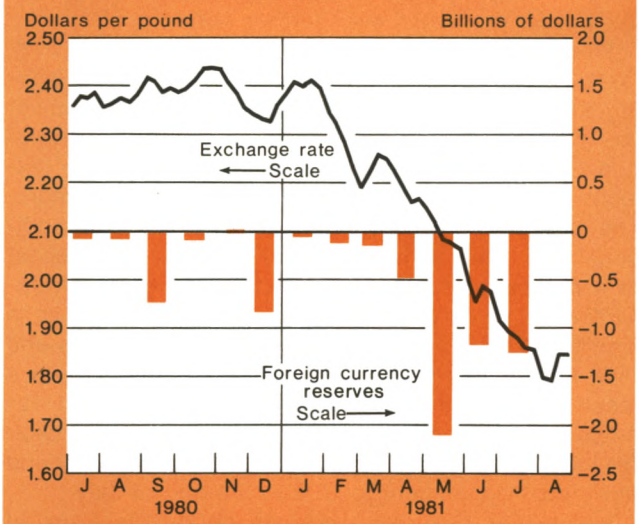
Sterling

By early 1981 the British economy had shown substantial improvements in both price and current account performance. Inflation had fallen back for several months to single-digit rates from the 20 percent or

Chart 6

United Kingdom

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

more level of a year earlier. The current account moved into a surplus of $6.6 billion for 1980, making the year-on-year improvement of $10 billion the largest of any industrial country and in sharp contrast to the general experience. These considerable achievements reflected a continued expansion of North Sea oil exports and an improvement in the nonoil terms of trade. They also reflected a sharp slashing of inventories which was but one feature of the severe recession that had gripped the economy for more than a year. Indeed, with corporate profits squeezed by persistently high interest rates, wages, energy prices, and a strong pound, British companies had also been forced to reduce fixed investment and to lay off workers in order to restore their liquid asset positions. Even so, the growth of sterling M-3 remained well above its target range, reflecting the continuing demand for bank credit, the unexpectedly large public-sector borrowing, and the ending of the supplementary special deposit scheme in June 1980. The Bank of England, therefore, kept monetary policy restrictive, and British interest rates had been slow to decline.

Britain's improving external position and relatively high interest rates had combined to push sterling up to a six-year high against the dollar and to rise even further against the Continental currencies. By end-January, however, the pound eased back to trade around $2.3630 against the dollar and was at 104.4, according to a new trade-weighted index adopted by the Bank of England on February 2. Meanwhile, the British authorities had taken advantage of the strength of sterling to repay prior to maturity a number of international loans taken up in the mid-1970s. As a result, British foreign exchange reserves were down from their 1980 highs but still stood at $18.7 billion.

By early February, the pace of capital outflows had accelerated, as United States interest rates had become unexpectedly firm and the dollar was strong generally in the exchanges. Although nonresidents continued to add to their sterling balances, there was increasing evidence that British residents were taking advantage of the elimination of exchange controls to diversify their investment portfolios into other currencies. Moreover, the protracted recession in the United Kingdom was weighing more heavily on market psychology. The persistent strength of sterling had generated bitter complaints from British industrialists over narrowing profit margins and declining product market shares. The rate of unemployment was rising more quickly and headed toward 10 percent. Also, a government decision to modify its plans for closing uneconomic coal mines, following an outburst of strikes by the nation's coal miners, was interpreted in the press as indicating the government's willingness to ease stringent policies aimed at making the economy work more efficiently. As a result, expectations developed in the market that the United Kingdom authorities might take advantage of the improvements both in inflation and in the current account to soften the restrictive policy stance and to provide some stimulus to the domestic economy.

Therefore, as the market awaited the March 10 budget, talk circulated that the authorities would cut the minimum lending rate by perhaps as much as 3 to 4 percentage points and allow a downward adjustment in the exchange rate as a means of stimulating economic activity. In this environment, the pound eased back against the dollar in line with other European currencies. But after mid-February, when interest rates in a number of other European currencies were sharply increased, commercial leads and lags moved heavily against sterling and some OPEC members shifted funds out of the pound. As a result, by early March the pound broke stride with the currencies of the Continent and fell against the dollar some 8 percent to as low as $2.1750.

For their part the authorities remained concerned over the possibility of a resurgence in monetary growth and inflation and over the persistence of a large public-sector borrowing requirement. In his March 10 budget speech, Chancellor Howe reiterated the government's

determination to maintain a restrictive policy stance until inflation came under control and called for increases in indirect taxes to reduce the projected public-sector borrowing requirement by £3 billion to £10½ billion. This tightening of fiscal policy was coupled with a 2 percentage point reduction of the central bank's minimum lending rate to 12 percent per annum as well as with a lowering of the target for sterling M-3 growth to a 6-10 percent annual range. The lowering of the minimum lending rate had already been discounted in the money and exchange markets. After the uncertainties about the budget had been cleared away, sterling moved up along with other European currencies as United States interest rates eased back from earlier highs. Thus, the pound recovered to $2.2960 around mid-March on a reflow of capital and a reversal of previously adverse commercial leads and lags. Against the dollar, sterling was a net 3 percent lower from end-January levels. Against other European currencies, it was also lower by about 7 percent, so that in effective terms the pound was trading about 100.2, a decline of 4 percent.

By April, British interest rates had settled around levels similar to those in Germany. Anecdotal information suggested that the economy was leveling off. But actual economic and financial trends were unusually difficult to monitor. A civil servants' strike had the effect both of delaying tax payments to the Exchequer and of impeding the collection of key trade and financial statistics. The Bank of England was proceeding with its plans to change operating techniques for monetary control so as to increase the role of market forces in determining short-term interest rates. And, as each step of the process was announced, the markets were somewhat unsure of the near-term implications. The pound eased along with other currencies against the dollar throughout the spring. By late May, it was about 10 percent lower at around $2.07. In effective terms, it was trading at 98.8.

During June the focus of market attention shifted to sterling. For some time, the energy situation had shielded the pound from a number of adverse factors. These included Britain's loss of competitiveness arising from earlier high rates of inflation and a strong exchange rate, a seriously deteriorating economy, and a weakening of political support for the government's continuing restrictive policies. Thus, when an increasing oversupply of oil internationally prompted a significant cut in the price of North Sea crude, an important element of favorable market psychology was shattered and the vulnerability of sterling began to show through.

The pound, therefore, came under heavy selling pressure during June and July, dropping through the psychologically important level of $2.00. Market participants were doubtful that the government would support the rate through a large increase in interest rates in view of the continuing recession. Talk circulated in the markets that exchange controls might be reimposed, prompting even further selling of sterling.

Thereafter, sterling stabilized, as British interest rates rose after the Bank of England began providing funds to the money market above rather than at the minimum lending rate. Also, following the resolution of the civil servants' strike, a pickup in tax collections was expected to tighten liquidity even more. The abatement of civil disturbances gave an additional lift, while Prime Minister Thatcher's proposal of a modest spending program to encourage private-sector hiring of young people was not viewed as a significant departure from past restrictive policies and thus tended to reassure the exchange markets. As a result, sterling traded around $1.84 on July 31 for an overall decline of 22¼ percent against the dollar for the six-month period. In effective terms, the pound declined 11¼ percent to 92.5 at the end of July.

Meanwhile, over the six-month period the Bank of England maintained its policy of intervening lightly on both sides of the market to smooth out sharp fluctuations in the rate. Accordingly, during the period under review, the United Kingdom external reserves were affected mainly by the repayment and prepayment of loans. Britain's foreign exchange reserves declined $5.1 billion over the six-month period to $13.6 billion on July 31.

French franc

By the beginning of the period under review, the French economy had moved into a recession that was to prove deeper and more protracted than many of the slowdowns then taking place elsewhere on the Continent. Industrial production was down 10 percent from the level of the previous year, and unemployment had risen in line with the growth of the labor force to 7.3 percent. At the same time, the sharp increase in oil prices of recent years and lagging productivity growth had contributed to a weakening of France's external position and a worrisome deterioration in its price performance. France's current account had swung back into a deficit of $7 billion, and inflation had accelerated above the two-digit level once more to a rate of 13 percent.

Faced with these setbacks to the five-year program of economic stabilization, the French authorities remained committed to the priorities of curbing inflation and maintaining the strength of the French franc. Whatever stimulus that had been provided to the economy in 1980 and again in late February 1981 was

modest in size and was intended to contribute eventually to export competitiveness. Monetary policy remained restrictive. The Bank of France had reduced its growth target for M-2 for 1981 to 10 percent, and the already tight limits on banks' credit growth were lowered 1 percentage point on average. Interest rates in France remained high relative to interest rates in most other countries on the Continent. In addition, the government continued to encourage large enterprises in France to take advantage of capital markets abroad to finance on a long-term basis large investment projects at home.

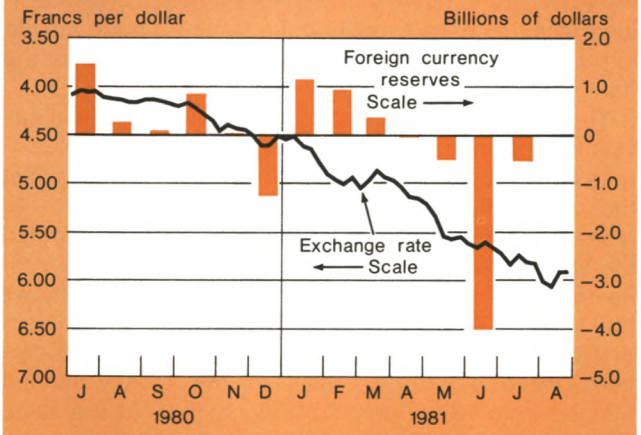
In the exchange markets, the current account deficit continued to be more than offset by capital inflows, reflecting the attraction of interest-sensitive funds from abroad and efforts of domestic residents to meet local financing needs in foreign currencies. In addition, the market's attitude toward the French franc was generally more positive than for other European currencies. France's current account deficit, though a source of concern, was considerably smaller than for Germany, its principal trading partner. The government's fiscal deficit, though greater than the preceding year, was only 1½ percent of overall GNP, so that financing the deficit was not as much of a burden as in many other countries. France's traditionally good relations with Middle Eastern countries were generally thought in the market to make it easier for France to attract funds from investors seeking an alternative to the dollar. These long-standing ties were also thought to help protect the nation from short-run disruptions in oil supplies, while France's commitment to the development of nuclear energy was seen as providing a more secure energy source in the longer run. Moreover, with the approach of presidential elections later in the spring, market participants believed that the government would take extraordinary steps if necessary to bolster the franc should it come under selling pressure. Meanwhile, France's foreign exchange reserves had swelled to an impressive $26.5 billion by January 31.

In this positive psychological climate, the franc had traded at or near the top of the EMS for almost two years, even as it declined against the generally rising dollar to FF 4.90 by end-January. Early in February, the franc continued to decline more slowly against the dollar than did the other EMS currencies, falling some 4½ percent to FF 5.1150 by midmonth. Within the EMS, it remained at its upper intervention limit and the French, German, and Belgian central banks intervened to keep the franc within its 2¼ percent band. In late February, however, the French franc fell below the German mark in the EMS following action by the Bundesbank to raise interest rates

Chart 7

France

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

in Germany. With French interest rates increasing not as rapidly as elsewhere, funds shifted out of francs and commercial leads and lags swung from francs to marks. Thus, by early March the franc had settled about ¼ percent below the mark in the EMS. Against the dollar, it fluctuated in line with other European currencies, recovering by the end of March to early-February levels. Nevertheless, France's foreign exchange reserves continued to strengthen, rising $1.3 billion over February-March to $27.8 billion reflecting in part intervention within the EMS.

Within France, the performance of the economy was becoming a matter of increasing public debate. Output had stabilized, but there was little evidence of an upturn. Unemployment was rising even more rapidly than before. Inflation remained high. And the current account deficit showed no sign of narrowing. In the exchange markets the franc continued to be bolstered by relatively high nominal interest rates through mid-April. Thereafter, as the electoral contest went through the first round of a two-stage voting procedure and forecasters indicated that the outcome would be close, some international investors began moving funds out of the franc. But, with the Bank of France now intervening to keep the franc from slipping within the EMS, the rate continued to hold steady against the mark. In this manner, the franc declined 8¼ percent against the dollar to FF 5.3950 by May 8, just prior to the second round of voting.

Mitterrand's election came as a surprise to the exchange markets. With the Paris stock market plummeting, massive amounts of funds began to be moved out of the franc. These flows largely took the form of commercial leads and lags but also represented withdrawals of deposits and liquidations of investments. These selling pressures quickly pushed the franc from the middle to the floor of the joint float and to FF 5.5875 against the dollar late in May.

The authorities responded quickly to contain these selling pressures. The Bank of France intervened heavily to keep the franc within its 2¼ percent band against the mark. Effective May 14, the central bank raised reserve requirements on sight deposits and eliminated the special reserve requirement on nonresident deposits that had been imposed to curtail capital inflows late in 1980. Also, it raised the discount rate on seven-day Treasury bills by 4½ percentage points to 18 percent, while day-to-day rates in the money market jumped from 13½ percent to 16 percent. At the same time, leading economic advisers to the new president reaffirmed France's commitment to the EMS arrangements.

Once in office the new government took further action to stabilize the franc by tightening exchange controls. With respect to trade financing, it reduced the scope for leading and lagging commercial payments and receipts to one calendar month (retroactive to May 1). Regarding portfolio investment in foreign currencies, residents were required as of May 22 to purchase the exchange from other residents, thereby establishing a separate market for these transactions and removing them as a source of pressure on the exchange rate. For its part, the Bank of France hiked its discount rate on seven-day Treasury bills another 4½ percentage points to 22 percent and day-to-day interest rates moved up as high as 20 percent.

In response to these stringent moves, the franc came into demand as exporters scrambled to convert foreign-currency receipts ahead of the month end. By end-May, therefore, the franc was off its lows against both the mark and the dollar. Thereafter, the new exchange control measures were expected to generate a continuing reversal of leads and lags well into the summer. Also, the tightening of credit conditions and the sharp rise in Euro-French franc interest rates to around 25 percent helped discourage nonresident outflows. Thus, the franc soon settled in around the middle of the EMS, a position it was generally to maintain through end-July.

As a result, the franc traded comfortably within the EMS during the June 21 Parliamentary elections that provided a sufficient majority to the new government to implement its economic program. By July, the authorities were proceeding with their program to reduce unemployment by expanding the economy and increasing its productive potential, while also carrying through a long-standing plan to nationalize key sectors of the economy. In particular, they announced plans to increase social benefit expenditures, raised the minimum wage, and announced plans for new education, housing, and industrial retraining programs. Even with tax increases to generate more revenue, the fiscal deficit was expected to double for 1981. The government also moved forward with plans to nationalize eleven industrial groups. Commercial bank lending ceilings were raised and minimum reserve requirements lowered to allow greater expansion of bank lending.

With the exchange markets now more settled, the Bank of France was also able to permit short-term interest rates to decline gradually, so that by end-July the central bank's discount rate on seven-day Treasury bills was down to 18½ percent and day-to-day rates had eased to 17¾ percent. Even so, the market remained pessimistic over the outlook for the franc, since France had adopted strongly stimulative policies while other countries were still emphasizing restraint. With the dollar rising across the board, the franc eased by the month end to FF 5.8775, down 20 percent on balance for the six-month period. Even within the EMS the market found reason to contrast the recent reflationary measures of the French government with the budget-cutting efforts taking place in Germany, especially after the Ottawa summit. Even so, the franc held its own around the middle of the joint band to close the period trading at FF 2.3728 against the German mark, down 3¼ percent on balance over the six-month period. Meanwhile, France's foreign exchange reserves, which had dropped $4.5 billion during May-June, declined only another $558 million to $22.6 billion, to register a net decline of $3.8 billion over the February-July period.

Italian lira

The Italian lira was under considerable downward pressure coming into the period as the market responded to a swing in Italy's current account back into heavy deficit, the persistence of relatively high inflation at home, and the lack of progress in containing government expenditures and curbing the public-sector deficit. The $15 billion deterioration in Italy's current account over 1980 to a $10 billion deficit had reflected in part an adverse turn in Italy's terms of trade resulting from the sharp increase in dollar prices for energy and other imported products. It reflected as well the weakening demand in Italy's principal export markets. In addition, the rapid pace

of inflation, at 20 percent by late 1980, had brought into question the competitiveness of Italy's export sector, especially in those countries participating in the fixed exchange rate arrangements of the EMS. Moreover, the large and growing public-sector deficit that amounted to 11 percent of gross domestic product (GDP) further clouded the prospect for reducing inflationary pressures in the near term. That deficit reflected a number of deep-seated problems including the high level of wage settlements, the pervasiveness of a wage indexation system, and the lagging productivity growth and weakening capital structure of Italy's large government-enterprise sector.

These problems had come into focus early in 1981 in the absence of progress in improving price or trade performance at a time when industrial output had rebounded from earlier depressed levels. The government had proposed a medium-term program intended to cut current spending, to stimulate investment, and to finance the increased investment spending abroad. But the pace of public spending had quickened and monetary growth had accelerated. In this environment, the lira had fallen against the dollar to a record low in New York trading of LIT 1,004.50 by the end of January. Within the EMS, the lira had required steady intervention support by the Bank of Italy to hold its position. Even so, Italy's foreign currency reserves stood at a relatively high $20.5 billion.

Meanwhile, the task of controlling inflation and supporting the lira in the exchanges had fallen on the Bank of Italy, which acted on January 31 to tighten control over expansion of money and credit. Ceilings on bank lending were extended to include loans under LIT 130 million and foreign currency loans, both previously excluded from limitation. The new ceilings were made effective March 31, at which time loans coming under the new controls were to be reduced to end-December levels and then subject to a new and lower set of growth limits for the remainder of the year. Credit extensions above the limits were made subject to a 50 percent deposit requirement in non-interest-bearing accounts at the central bank. As before, foreign currency loans to exporters were excluded. These actions improved exchange market sentiment toward the lira early in February. Though the lira eased against the dollar, which was strengthening at the time, it kept generally in line with other currencies in the EMS.

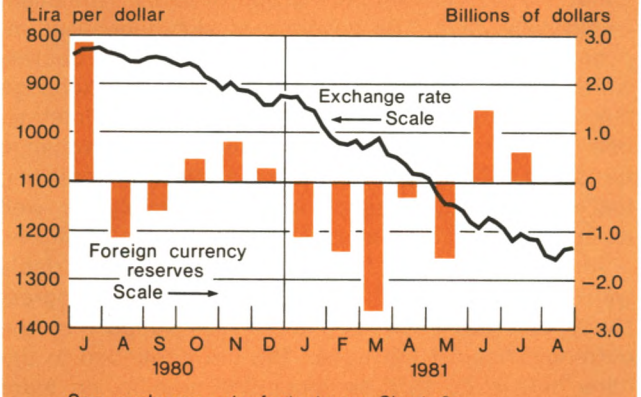
During February, however, the most recent information suggested a further widening of the trade and current account deficits and intensification of domestic inflationary pressures. As a result, the lira failed to recover late in the month by as much as the currencies of other Continental countries, which were being bid up in response to sharp increases in short-term interest rates in their domestic markets. By mid-March the lira had slipped nearly 4 percent against the German mark and was thus requiring intervention support to hold its position within the EMS. As the March 31 deadline approached for cutting back on foreign currency loans under the new credit ceilings, importers and other residents came into the market as buyers of foreign currency. These transactions added to the pressure against the lira, which fell through Italy's divergence threshold within the EMS even as the Bank of Italy stepped up its intervention support. These operations contributed to a $4 billion decline in Italy's foreign currency reserves during February-March.

In response to these exchange market pressures, a series of actions were taken to support the lira over the weekend of March 21-22. They included a 6 percent downward adjustment of the lira's central rate within the EMS, which was reflected in the market by a 2½ percent depreciation against the dollar. Also, to absorb liquidity the Bank of Italy hiked reserve requirements from 15¾ percent to 20 percent above end-February levels on both resident and nonresident lira-denominated bank deposits. It also raised the discount rate by 2½ percentage points to 19 percent, the first change in this rate since September 29, 1980. In addition, the government announced its intention to propose measures to Parliament to offset the potential effect on the government deficit of several budgetary amendments passed by Parliament in preceding weeks. The proposals focused on cuts in current

Chart 8

Italy

Movements in exchange rate and official foreign currency reserves



See exchange rate footnote on Chart 3.

spending in line with those announced during the winter which, when approved by Parliament, would be sufficient to bring the projected 1981 government deficit back to the LIT 37.5 trillion level originally envisaged.

After these measures and as a result of its new EMS parity, the lira moved from the bottom to near the top among the EMS currencies. Also, the expansion of money and credit began to slow in response to the tightening of monetary policy. Skepticism remained, however, over the fiscal situation. As a result, the lira soon began to ease toward the middle of the EMS and the Bank of Italy intervened on occasion to limit any slippage.

During April and May, as United States interest rates had again turned higher, short-term funds were drawn increasingly from Italy. Thus, the lira became more vulnerable to downward pressure. Moreover, at home Italy's inflation problem had again become a major focus of public debate. Exchange market participants took note that the Parliament had not yet acted on either the short-term austerity measures proposed by the government in March or the three-year program under discussion for months. In addition, a major political controversy diverted attention away from economic matters. When it reached a crisis in late May that brought down the Forlani government, any chance of near-term action on policy initiatives evaporated. Moreover, by end-May, Italy's foreign exchange reserves had dropped a further $2 billion to $14.5 billion.

To address the immediate pressures in the exchange and financial markets, the Forlani government—acting in a caretaker capacity—imposed an austerity program by decree that included increases in certain public charges and cuts of 5 to 10 percent in some categories of government spending. These actions were intended to reduce the government deficit by about 7½ percent in 1981 if approved by Parliament within sixty days. The government simultaneously imposed an import deposit scheme, also by decree, which required that all purchasers of foreign exchange place with the Bank of Italy a ninety-day, noninterest-bearing deposit equal to 30 percent of the exchange transaction. These deposits had the effect of increasing the cost of payments in foreign currency as well as cutting into credit available for domestic purposes.

After these actions, the lira traded more comfortably within the EMS, enabling the Bank of Italy progressively to scale back its intervention support of the currency. Against the dollar, the lira continued to decline but, in contrast to preceding months, no more rapidly than other Continental currencies. During July the formation of a new government under the Republican Giovanni Spadolini and the onset of seasonal inflows from tourism gave additional support to the lira. The Bank of Italy then became a sizable net buyer of dollars for the first time during the period under review. By the end of July, the lira was trading at LIT 1,227.50, down on balance 22¼ percent against the dollar and down 5 percent against the German mark. Meanwhile, Italy's foreign currency reserves rose $2.0 billion after end-May to $16.5 billion at end-July for a $4.0 billion decline over the six-month period under review.

Other currencies within the European Monetary System

In early 1981 the countries whose currencies are members of the EMS joint floating arrangement faced similar problems. Most were dependent on capital inflows to finance current account deficits. Fiscal deficits had grown and were exerting increasing strains on domestic capital markets, and inflationary pressures appeared to be accelerating even as the domestic economies were weakening. Although monetary policies were generally restrictive, slowdowns in the domestic economies and rising unemployment were seen in the market as constraining the authorities from increasing interest rates further to maintain the currencies' attractiveness to international investors and portfolio managers. Some countries had been able to attract substantial amounts of private funds, and others looked to government-arranged loans from abroad as a means of achieving external balance and stabilizing their currencies within the joint float. But, in either case, the EMS currencies were vulnerable to capital outflows attracted by relatively high interest rates in other countries and to an increasingly bullish sentiment toward the dollar. As a result, these currencies were continuing to decline as the six-month period under review opened.

Within the EMS, there were also considerable strains and the 2¼ percent band for all but the Italian lira was fully stretched. Requiring persistent support at the bottom of the band was the Belgian franc, along with the German mark. The Belgian franc was weighed down by concern over a domestic economy that was undergoing difficult structural adjustment, experiencing rising unemployment, and suffering from a fiscal deficit that had mounted to more than 10 percent of GNP. The current account deficit also was large, and both deficits were being financed to a large extent through government-arranged loans denominated mostly in dollars and other Eurocurrencies. Close behind the French franc at the top of the band was the Dutch guilder. It was helped by the relatively favorable current account position of the Netherlands and interest rates that were high enough to continue to attract nonresident invest-

ment in long-term guilder-denominated bonds. The Danish krone and Irish pound fluctuated around the middle of the band, and the Danish and Irish authorities relied heavily on conversions of foreign borrowings to keep their currencies trading comfortably within the joint float.

This configuration of currencies changed abruptly in mid-February, when the German authorities reacted to intensifying selling pressure against their currency by tightening monetary policy. German interest rates rose considerably, especially rates on call money, and the mark snapped up within the EMS, rising from the bottom to the top of the joint float. As the mark advanced within the EMS, the French franc and Dutch guilder came under modest selling pressure against the mark. But these pressures were soon contained, and the currencies stayed in the upper half of the European Community (EC) band after the Bank of France and the Netherlands Bank, following quickly on the Bundesbank's measures, raised their own interest rates by 1 to 1½ percentage points. The Danish krone and the Irish pound eased into the lower half of the joint float but were kept from falling further by modest intervention.

This changing configuration of currencies within the EMS left the Belgian franc all the more exposed at the bottom of the joint float. Belgium's fiscal and current account deficits continued to deteriorate. The authorities were reluctant to raise domestic interest rates because the economy was still weak and labor unrest was already festering in some of the most depressed industries. The coalition government was having difficulty agreeing on a program of expenditure cuts and other measures to reduce the fiscal deficit. And the prolonged negotiations on economic policy were casting doubt in the exchange markets about the government's ability to deal with the country's economic problems.

Against this background, the Belgian franc remained pinned to its lower intervention point as the EMS group of currencies gained against the dollar late in February. In March, following a downward adjustment of the Italian lira which put it in the upper half of its new band, the franc was exposed to even greater selling pressure. Heavy support had to be provided for the Belgian franc mainly by sales of German marks and French francs. The Belgian National Bank increased its official lending rates in stages over the month. By March 26, its discount rate was up 1 percentage point to 13 percent and its Lombard rate was up 3 percentage points to 15 percent. Also during the month, the government announced parts of its program to cut the fiscal deficit by BF 30 billion. However, the pressures against the Belgian franc remained intense as continuing shifts in commercial leads and lags aggravated the exchange market impact of the large current account deficit. On March 30 the government resigned, and immediately thereafter the National Bank hiked its discount and Lombard rates another 3 percentage points. It also imposed measures to ensure that financial institutions would not restore their liquidity by unloading government debt and would not add to outflows of capital by extending credits to the private sector. To restore confidence in the franc, a one-month freeze on wholesale and retail prices was imposed effective April 2. These new initiatives helped ease the immediate pressures against the Belgian franc.

During April and early May, trading became more comfortable within the EMS, which nevertheless declined progressively against a generally strengthening dollar. The mark remained at the top of the band, providing the Bundesbank an opportunity to improve its position within FECOM by acquiring small amounts of other EMS currencies in the market and by having its currency used in intervention to support other EMS currencies. The Belgian franc gradually came into better balance, moving off the floor of the EMS in a favorable reaction to the recent tightening of monetary policy. The Dutch guilder, by contrast, declined into the middle of the band as the market reacted to the failure of Dutch interest rates to keep pace with those abroad and to uncertainties ahead of Parliamentary elections. The Danish krone also eased slightly within the joint float, while the Irish pound stayed near the bottom of the band. Intervention by the central banks of Belgium, the Netherlands, Denmark, and Ireland was modest and conducted mostly in dollars to stabilize the position of their currencies in the EMS. As the French presidential elections moved through the first round of balloting, by contrast, official purchases of francs against both marks and dollars became heavy as the Bank of France acted to steady the franc in the middle of the joint float.

Later in May, the announcement of Mitterrand's victory in the French presidential elections brought the French franc under immediate pressure in the EMS and generated skepticism in the market over the commitment of a new French government to the EMS institutions. The French authorities soon acted to support their currency by tightening exchange controls and by raising interest rates sufficiently to trigger some reversal of leads and lags. In addition, to reassure the markets, both President Mitterrand and Chancellor Schmidt publicly reaffirmed their intention to cooperate in upholding the EMS arrangements. Meanwhile, the Dutch guilder, aided by fairly moderate but persistent intervention by the Netherlands Bank, managed to maintain its position in the upper half of the joint float.

Also, the Danish krone and the Irish pound remained stable within the EMS.

During June and July the Belgian franc came under renewed selling pressure as the market reacted to a progressive lowering of domestic interest rates and to the new government's lack of progress in reducing the fiscal deficit. The central banks met this pressure with forceful intervention, however, and by late July the franc had stabilized within its EMS band. Nevertheless, the market remained concerned about the prospects for EMS countries, individually and collectively. With sentiment toward the dollar becoming increasingly bullish during the summer, the EMS currencies as a group weakened further. By the end of July, the EMS currencies had declined against the dollar by 16¼ percent to 22¼ percent on balance over the six-month period.

Canadian dollar

The Canadian government sought to harness Canada's rich natural resources to generate higher economic growth and to curb the deeply entrenched inflationary pressures. Its plans for achieving these objectives were embodied in proposals submitted late last year to Parliament for the 1981 budget and for a national energy program. According to the budget, the federal deficit would be substantially reduced over several years with cuts, among other things, in transfers to the provinces in the context of the next federal-provincial review of financial arrangements in 1982. The largest contribution to cuts in the fiscal deficit, however, came from changes in taxation and subsidies proposed in the energy program. According to the proposed energy program, the federal government would unilaterally establish a single price for crude oil at levels, though higher than before, still well below international levels. Unification of domestic and imported crude oil prices would be achieved through new levies and a gradual elimination of the direct government subsidy on imported oil. Incentives for exploration and development would be provided in amounts varying largely with the degree of Canadian ownership and control of the enterprises concerned. A federal tax on oil and gas revenues, together with the increased levies, would considerably increase federal revenues.

In the exchanges, market participants questioned whether adequate incentives would remain to maintain the momentum of exploration and development and to continue to attract the sizable inflow of investment from abroad that had buoyed the currency over previous years. In addition, the pricing and revenue provisions, together with other elements of the budget, raised complex issues about the relationship between the federal and provincial governments. Late in the year, the Canadian dollar had come under selling pressure in the exchange markets, dropping to its lowest levels since the 1930s. The Bank of Canada had responded forcefully to these selling pressures by intervening heavily to cushion the Canadian dollar's decline and by raising short-term interest rates. As a result, the market had come into better balance and the spot rate had recovered somewhat. It was still trading, however, not far above its recent lows at Can.$1.1948 by the end of January. Meanwhile, Canada's foreign currency reserves stood at $1.4 billion, and the government of Canada's outstanding borrowings under its $3.0 billion credit line with foreign banks amounted to $300 million. Its $2.5 billion credit line with Canadian chartered banks remained fully available. (The latter credit line was increased to $3.5 billion in June 1981.)

By February a more positive attitude developed for the Canadian dollar. Canada's trade position had benefited from earlier shifts in the terms of trade and an improved competitive position. The trade surplus had climbed to an annual rate of $10 billion in the last quarter of 1980, swinging the current account into an uncharacteristic surplus at a time when most industrialized countries were in deep current account deficit. Also, the Canadian economy was particularly buoyant late in 1980, led by expanding exports. This pickup in activity contrasted with the developing slowdown in much of Europe and Japan.

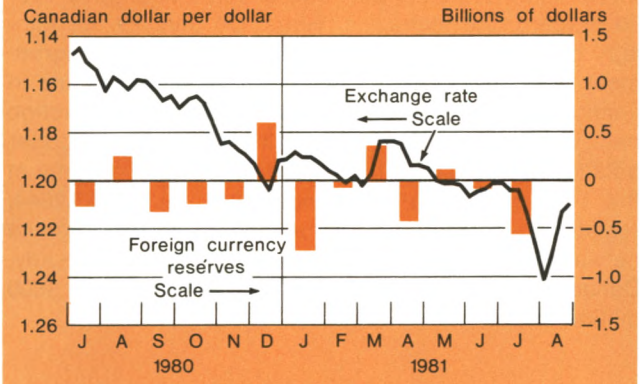
The unexpected pickup in economic activity and ensuing resurgence in M-1 provided the basis for the monetary authorities to put upward pressure on short-term interest rates. In addition, the persistently high level of interest rates in the United States and the potential for interest-sensitive outflows to put renewed selling pressure on the Canadian dollar, and thereby to exacerbate the inflationary situation, suggested the desirability of allowing Canadian interest rates to move gradually higher. Thus, Canadian interest rates continued to increase in early March, even as United States interest rates subsequently edged lower, so that the usual pattern of interest rate differentials favorable to Canada was reestablished. Also, on February 13, the Bank of Canada, in announcing its monetary growth targets for the new year, cut the 1981 range for M-1 expansion 1 percentage point to 4-8 percent.

In response to these various factors, the Canadian dollar strengthened in the exchanges by about 1½ percent to around Can.$1.1783 by mid-March. The Bank of Canada, continuing to intervene to moderate short-run fluctuations in the currency, was a net purchaser of dollars in the exchanges, as is reflected in the

Chart 9

Canada

Movements in exchange rate and official foreign currency reserves

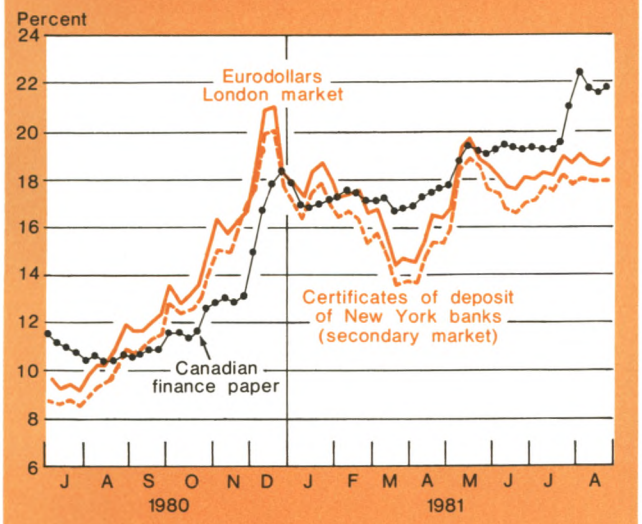


See exchange rate footnote on Chart 3.

Chart 10

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

Three-month maturities*



*Weekly averages of daily rates.

$378 million increase in foreign exchange reserves during February-March.

During the second quarter, however, the outlook for the Canadian dollar became more guarded. Negotiations to resolve disagreements over pricing of oil and gas were dragging on without clear results. Pending resolution of these issues, the principal energy-producing province of Alberta had started to cut back oil production and these cutbacks were leading to a previously unexpected increase in Canada's oil-import bill as well as clouding prospects for the anticipated increase in federal government revenues. Also, in the context of a federal government proposal to repatriate the Canadian constitution, a number of issues relating to the relationship between the federal and provincial governments were being reviewed by the courts. Meanwhile, a first-quarter slackening of export demand, particularly to the United States, had cut into Canada's trade surplus, and the current account appeared to be returning to deficit. Moreover, domestic inflation had accelerated, spurred partly by increases in energy prices, and the consumer price index was now rising at an annual rate in excess of 12 percent. Also, wage settlements had failed to moderate, a number of industries were being hit by labor strikes, and difficult wage negotiations were approaching. Partly for domestic reasons and partly in response to a renewed rise in United States interest rates, the Bank of Canada allowed Canadian rates to move up further. Initially, however, Canadian interest rates did not keep pace with those in the United States so that by mid-April the previously favorable interest differentials had eroded. Thus, the Canadian dollar eased against the rapidly rising United States dollar through the spring. But it continued to move higher against the other currencies which were weakening more rapidly against the United States currency.

Nevertheless, Canada had headed back toward its traditional pattern of current account deficit financed by capital inflows. Canadian entities had significantly stepped up their borrowing activities in the United States. With the Canadian dollar still close to its historic lows against the United States dollar and with the monetary authorities having demonstrated determination to defend the rate, many borrowers took advantage of the relatively firm United States currency to borrow abroad and convert the proceeds to finance domestic needs. At the same time, however, Canadian residents sought to make direct and portfolio investments abroad, both in the energy sector to take advantage of more rapid price increases than permitted at home and in other natural resource industries. Canadian investors were also purchasing foreign-owned assets in Canada. In this connection, a few foreign-owned companies in Canada became targets of unsolicited takeover bids, and widely publicized fights for control drew attention to the impact of the new pricing and tax provisions favoring Canadian ownership in the energy sector. As market participants considered the

implications for capital flows and debt servicing requirements of shifting ownership of the natural resource industries to Canadian ownership, the Canadian dollar became increasingly vulnerable in the exchanges.

Indeed, in July the Canadian dollar came under extreme downward pressure in a selling wave that was precipitated by a few large commercial orders. Once the decline began, market participants focused their attention on other factors that were also adverse for the Canadian dollar. With the United States dollar rising sharply against other currencies at the same time, the Canadian dollar fell further. To steady the market, the Bank of Canada bought Canadian dollars heavily in the market. It financed its intervention, in part, by drawing $700 million under its $3.0 billion facility with foreign banks, leaving its $3.5 billion standby facility with the Canadian chartered banks fully in place. Also, to support the exchange rate, the Bank of Canada moved to push interest rates sharply higher, and by the close of the period the rate on three-month Treasury bills had climbed to slightly over 20 percent, the highest in years. On July 29 the Ministry of Finance announced that it had obtained agreement from the major Canadian banks to curb loans to finance takeovers of foreign companies. This action helped bring the Canadian dollar market into better balance after the period under review. But in the interim the Canadian dollar dropped lower to Can.$1.2344, registering a decline of 3¼ percent for the six months between end-January and end-July. Also, at end-July, Canadian reserves stood at $748 million, down $600 million on balance.

THE ARITHMETIC OF INTEREST RATES

The Federal Reserve Bank of New York's new, 32-page booklet, "The Arithmetic of Interest Rates", seeks to explain how to calculate interest rates. It begins with the elements of simple interest and builds on these to explain, in lay terms, the concept and mathematics of compound interest. The booklet also attempts to unravel some of the problems consumers might have in calculating interest yields on Treasury securities, as well as figuring monthly mortgage and consumer instalment loan payments.

It is available free of charge from:

Public Information Department
Federal Reserve Bank of New York
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