FOREIGN INDUSTRIAL TARGETING AND ITS EFFECTS ON U.S. INDUSTRIES PHASE II: THE EUROPEAN COMMUNITY AND MEMBER STATES

Report to the Subcommittee on Trade, Committee on Ways and Means, U.S. House of Representatives on Investigation No. 332-162 Under Section 332(b) of the Tariff Act of 1930

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PREFACE

On April 19, 1983, the United States International Trade Commission instituted investigation No. 332-162 to obtain information on foreign industrial targeting. The investigation was instituted by the Commission on its own motion at the request of the Subcommittee on Trade of the House Committee on Ways and Means, under section 332(b) of the Tariff Act of 1930 (19 U.S.C. 332(b)) to advise the subcommittee on the implications of these practices for U.S. industries. The Commission received the request on March 25, 1983. On October 7, 1983, the Commission gave the subcommittee its report on the first phase of the investigation. That report contained a general introduction to the issue of targeting, a discussion of the relationship between U.S. trade laws and targeting, and a thorough discussion of industrial targeting in Japan. 1/

The Commission subsequently began the second phase of this investigation, which involves targeting by the European Community and its member states. Public notice of the investigation was given by posting a copy of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, D.C., and by publishing the notice in the Federal Register of October 26, 1983 (volume 48, No. 208, pp. 49559-60). 2/

The information contained in this report is from a number of sources, including fieldwork, briefs filed by interested parties, the Commission's files, and other Government agencies. This report is the Commission's response to that part of the subcommittee's request regarding the European Community (EC) member states. The Commission may further consider and review the subject of this report in the final phase of this investigation as appropriate.

1/ (Foreign Industrial Targeting and Its Effects on U.S. Industries Phase 1: Japan. Report to the Subcommittee on Trade, Committee on Ways and Means, U.S. House of Representatives on Investigation No. 332-162) . . . , USITC Publication 1437, October 1983.)

2/ A copy of the Commission's notice of investigation and hearing is presented in app. A. The hearing was later canceled because of a lack of witnesses.

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Introduction

This report covers the second phase of the Commission's investigation of industrial targeting. This phase examines the policies of the European Community (EC) and certain of its member states to determine which ones affect trade patterns by targeting selected industries. A report on the first phase, which covered Japanese industrial targeting, was released in October 1983. 1/ A report on the third and final phase, which will cover targeting by other major U.S. trading partners, is planned for the fall of 1984.

Industrial targeting is defined as coordinated government actions that direct productive resources to give domestic producers in selected non-agricultural industries a competitive advantage. There are four elements to this definition: (1) there are coordinated government actions; (2) productive resources are directed; (3) only selected industries are targeted; and, (4) the purpose is to provide domestic producers in these industries with a competitive advantage. Targeting techniques include the selective use of home-market protection, tax policies, financial assistance, science and technology assistance, and exemptions to laws governing cartels and mergers. Different techniques can have very different effects. For example, whereas financial assistance may quickly increase an industry's output, science and technology assistance may not increase output for years, and antitrust exemptions may reduce an industry's output by enabling it to increase its prices above the competitive level.

This report begins with a discussion of the definition of targeting and of targeting's effects on U.S. industries. The report explains that although targeting can seriously harm the competitiveness of a U.S. industry or group of industries, it is unlikely to significantly affect the U.S. long-run current account balance.

The report then discusses the policies of the EC that relate to targeting. It also discusses the industrial policies of three EC member states: France, the Federal Republic of Germany, and the United Kingdom. Each of the country sections discusses the historical development of the country's industrial policy and then discusses five major areas of industrial policy corresponding to the targeting techniques listed above: home-market protection, tax policy, financial assistance, science and technology, and cartel and merger policy. The report also reviews targeting techniques of the EC and its member states as they relate to a group of specific industries, and it presents data profiles for those industries. Outside of the steel and coal sectors, the EC does not target, but its member states have targeted both new-technology industries and depressed industries. The EC has a set of regulations that discourages targeting by member states when the targeting distorts intra-EC trade.

1/ Foreign Industrial Targeting and Its Effects on U.S. Industries Phase 1: Japan . . ., USITC Publication 1437, October 1983.

SUMMARY

o <u>The EC uses its treaty-based industrial policy instruments to regulate selected industries and to influence the member states' industrial policies and targeting practices</u>.

The EC targets coal and steel, but in other industries where significant targeting exists the targeting almost always is done by member states. The Paris Treaty, which established the European Coal and Steel Community, gives the EC more power over coal and steel than the Rome Treaty, which established the European Economic Community, gives the EC over other industries.

Although the Rome Treaty does not empower the EC to make or implement industrial policy, it does charge it to regulate, administer, and develop the common market. As a consequence, the EC regulates import trade through the Common External Tariff, which includes import quotas, minimum import prices, voluntary restraint agreements, and antidumping duties; it regulates state subsidies to industries and intra-EC trade through the common competition policy; and it assists various industrial sectors, regions, and other areas of common interest, through its programs for subsidized loans and grants. These loans and grants generally are not directed to specific industries.

o <u>The EC has authority to disapprove aids to industry granted by its member states, if these aids distort competition within the Community</u>.

Any aid granted by a member government that distorts competition by favoring certain firms or production of certain goods is incompatible with the provisions of the Rome Treaty. The EC Commission is empowered to disapprove or force modification of state aids that do not satisfy a strict set of guidelines. The EC Commission has developed specific codes of aid for the steel, coal, textiles and clothing, synthetic fibers, and shipbuilding industries. These aids must be accompanied by plans to restructure and reduce capacity, and they must avoid distorting trade among the member states. Some state aids escape the EC Commission's scrutiny. However, on balance, the EC Commission's powers are important constraints on the ability of the member governments to grant state aids to support domestic industry.

o <u>EC member states have targeted several industries whose decline in international competitiveness threatened to cause politically unacceptable levels of unemployment</u>.

Among the industries aided for this reason are steel, coal, shipbuilding, textiles, apparel, and automobiles. In aiding these industries, the EC member states generally tried to ensure that their capacity did not increase. However, the states' actions lessened the decline in capacity that otherwise would have taken place. In addition, these industries have been aided to a certain degree by import protection and subsidies.

o EC member states have targeted new-technology industries that they believe will be of great importance in the future.

Through a variety targeting practice, the EC member states have targeted the aircraft, computer, and telecommunications equipment industries for this reason. Because the EC believes that it is at a disadvantage in competing with U.S. or Japanese industries, the apparent goal of this targeting is to create industries that are strong competitors in world markets.

Home-Market Protection

o Barriers to imports generally have declined in the EC member-states; of the few exceptions, most have involved increased import protection for depressed industries.

The EC has participated in several international agreements to reduce barriers to imports, notably the Kennedy and Tokyo rounds of the General Agreement on Tariffs and Trade (GATT). Barriers to imports, however, did increase in some industries. For example, the EC negotiated voluntary restraint agreements involving textiles and apparel with several countries and a voluntary restraint agreement involving machine tools with Japan. The EC also imposed a system of minimum import prices for steel.

o The EC Governments sometimes take action outside of GATT procedures to restrict imports; recent examples involve Japanese automobiles and video cassette recorders (VCR's) imported into France and Japanese automobiles and bearings imported into the United Kingdom.

For example, a quota on Japanese automobiles limits the level of imports from Japan to 3 percent of French domestic auto sales. The French Government temporarily required that Japanese VCR's be cleared through a small, rural customs office, 210 miles from Paris, which was unable to process a large number of imports.

o Government procurement preferences once were an important method EC member states used to support domestic industries. Although their use of these preferences has declined significantly, they could possibly be of considerable importance as a targeting tool.

For example, France and the United Kingdom used procurement preferences to encourage their aircraft and computer industries. On January 1, 1981, however, EC member states acceded to the GATT Agreement on Government Procurement. This agreement requires them, as well as other signatories, to give imported and domestic products equal treatment in many areas of government procurement. Furthermore, the member states have been reducing procurement preferences in areas not covered by the agreement, because such preferences reportedly are often a costly and ineffective way to support domestic industry.

- EC member states generally are open to U.S. investment.

Representatives of U.S. industry report that there are very few restrictions on their ability to invest in EC member states and that the Governments of these countries generally treat subsidiaries of U.S. businesses the same way they treat native firms.

- France is open to most foreign investment. However, the tools to restrict investment in certain targeted industries are in place and have been used in the past. Frequently in sensitive industrial sectors, joint ventures between foreign and national companies are encouraged by the Government as alternatives to wholly-owned foreign subsidiaries.

Foreign ownership of French industry is extensive, and most foreign direct investment seems to take place without much difficulty. Nonetheless, all foreign investments require the approval of French authorities. Furthermore, by offering investment incentives like capital grants and tax breaks for investments in depressed areas, the Government's actual and potential role in controlling foreign direct investment is still further enhanced.

Tax Policies

- The French, British, and West German tax laws generally apply equally to all industries, but these countries do have a few tax benefits that favor specific depressed industries.

France briefly gave specific tax benefits to textiles, but the EC stopped that practice. Other French tax benefits are legally available to firms throughout manufacturing, although industries differ in their ability to take advantage of them. The only industry to which the United Kingdom gives specific tax benefits is shipbuilding. West Germany gives EC-approved tax benefits to coal, shipbuilding, and steel.

- The French, British, and West German Governments all use special tax provisions to encourage research and development.

France gives a tax credit for an increase in research and development (R&D) expenditures. The United Kingdom allows certain assets to be depreciated more quickly if they are used in R&D than if they are used in other investment activities. West Germany gives a tax credit for R&D expenditures. Because these tax provisions have very different structures, they are difficult to compare, however, the British tax benefits for R&D, appear to be the least generous. In general, the various country programs do not seem to account for differences in investment levels.

Financial Assistance

- The EC provides a wide variety of subsidized loans, loan guarantees and grants. This aid goes mostly to mature and growth-oriented industries, to depressed regions, and to other areas of common interest, such as promotion of small- and medium-size enterprises.

The EC gives financial aid through a variety of channels. One of these, the European Coal and Steel Community (ECSC), mostly aids the coal and steel industries. Other EC aid generally is not directed to specific industries.

- French Government control over domestic financial markets could be a powerful targeting tool, although its use is restricted by internal economic considerations and international commitments.

The French Government's control over local financial markets comes from its ownership of the major banks, from its control over numerous financial intermediaries and over access to the bond market, and from its regulation of interest rates and credit flows.

- The French Government provides special financial support to nationalized companies in several industries: The proportion of Government ownership has increased considerably since the Second World War and especially in the years since 1981.

According to one estimate, from the Second World War until the mid-1970's, the state acquired majority shareholdings in 500 industrial and commercial companies and minority shareholdings in over 600 others. In 1981, five large companies and almost all major banks were nationalized, bringing the proportion of employment, sales, exports, and value added of the state-owned enterprises to about 25 percent of the total for French industry. (State-owned enterprises' share of French value added is even higher if subsidiaries of the nationalized firms are included.)

- In addition to its support of major nationalized companies, the French Government also directly funds a number of special sectors to improve their international competitiveness.

These sectoral plans aim to increase the international competitiveness of processing industries such as textiles, steel, clothing, footwear and leather, and machine tools. The plans promote associations of domestic producers, increase R&D spending, and encourage new investment.

- To increase the funds going to innovative industrial activity, the French Government has established a special tax-free savings account and several financial intermediaries. Because the French Government controls the distribution of these funds, it can use them for targeting if it chooses.

The largest of these funds under the current Government are the Fund for Industrial Modernization, the Credit National, and the Credit d'equipment des

PME. The three offer loans at subsidized interest rates, and they are all managed by boards on which the Government has a significant role.

o British grant programs usually are not directed to specific industries.

The British Government usually gives grants to encourage investment in general or to encourage the growth of depressed regions. The only known recent exceptions to this rule are schemes to help the aircraft and shipbuilding industries and a program to help nonnationalized steel producers restructure their plants. The Government stopped accepting applications for restructuring aid from these steel producers in September 1982.

o The British Government has made equity investments in firms in depressed industries that probably could not have attracted private capital. The Government, however, also has constrained the workings of these firms in ways that reduced their competitiveness.

The Government has often forced nationalized firms to take steps that further Governmental goals but that harm corporate growth. For example, political considerations forced British Steel to spread its investment too thinly rather than concentrating it in a few locations where it could do the firm the most good.

o The British Government is reducing its ownership of industry.

Since Prime Minister Thatcher came to power in 1979, the Government has sold 2 billion pounds of its equity holdings. The Government is planning to sell more of its holdings, including the country's largest airline and a controlling share of its telecommunications network.

o Both the United Kingdom and West Germany have programs to make financing more readily available to small innovative firms.

These programs, which are not directed to specific industries, are motivated by a belief that the capital markets do not provide such firms with sufficient financing. In 1982, investments by these programs were less than 0.1 percent of gross fixed capital formation in the United Kingdom and less than 0.05 percent in West Germany.

o West German financial aid favors four industries: aircraft, coal, shipbuilding, and steel.

In 1982, coal mining received approximately 35.9 percent of West German financial aid, aircraft received 11.0 percent, steel received 10.0 percent, and shipbuilding received 6.5 percent. Shipbuilding also benefited from subsidies given to encourage modernizing the West German merchant marine.

o West German financial aid and tax benefits to industry rose from 1966 to 1980 but fell from 1980 to 1982.

The combined value of financial aid and tax benefits to industry, after adjusting for inflation, rose by 362 percent from 1966 to 1980, and then fell by 35 percent from 1980 to 1982.

Science and Technology

o The EC funds research and development projects, in whole or in part, covering coal, steel, textiles, footwear, data processing, information technologies, biotechnology, nuclear and solar energy, nuclear fusion, and telecommunications.

Over the past ten years, the EC member governments' combined R&D budgets have increased by one-third. The EC member governments still spend 16 percent less on civil R&D than does the United States, but they spend twice as much on commercial innovation as Japan.

o Most government expenditures on research and development by members of the EC were spent on defense-related research and on promoting basic knowledge. Relatively little was spent on improving industrial productivity.

In 1982, EC member states reported that improving industrial productivity was the goal of 11.1 percent of their total R&D expenditures. It was the goal of 12.5 percent of French Government R&D expenditures, 7.0 percent of United Kingdom Government R&D expenditures, and 12.0 percent of West German Government R&D expenditures.

o The EC recently began a special program to support research and development in information technology industries.

Projected EC funding for the European Strategic Program for Research and Development in Information Technologies (ESPRIT) is $650 million to be spent from 1984 to 1988. Almost all of this funding will be directed to collaborative projects carried out by firms or research institutions from at least two member states. ESPRIT will focus on five areas: advanced microelectronics, software technology, advanced information processing, office automation, and computer-integrated manufacturing.

o The French Government has long pursued policies aimed at advancing science and technology. At times these policies have been specifically targeted at certain industries; at other times they have been oriented to industrial innovation in general.

In the 1970's the French Government invested large amounts in computers (the Plan Calcul), in aviation (Airbus and Concorde), and in other industries. Currently, the French Government is concerned primarily with scientific innovation in the electronics and related industries and has an elaborate plan, Programme plurane en Faveur de la Filiere Electronique, for this sector. The Government also has established a goal of 2.5 percent of Gross National Product to be invested by the state and private industry in industrial research and development activity by 1985.

- British and West German Government funding of research and development has favored the aircraft and electronics industries.

Both of these governments have established special programs to fund R&D in these industries, and they finance a larger share of R&D for these industries than for all manufacturing.

- West German Government aid to commercial R&D has steadily grown.

From 1975 to 1982, the inflation-adjusted value of direct Government funding of commercial R&D rose by 39 percent. The inflation-adjusted value of total Government funding of R&D, which includes the cost of tax benefits and other measures that encourage firms to do more R&D, increased by 66 percent.

Cartel and Merger Policy

- Occasionally EC member states' antitrust policies differ from those in the United States. French cartel and merger policy aims primarily to increase competition, but it also allows for considerable concentration in industries with distressed firms. Furthermore, through the use of subsidized loans, the French Government indirectly encourages mergers in distressed industries.

Although the French Government actively prosecutes anticompetitive actions, French cartel and merger policy usually is subordinated to the major goals of French economic policy--employment and growth. The Government has arranged loans or grants to help over 500 distressed firms merge with healthier firms.

- The United Kingdom and West Germany both allow depressed industries to jointly agree on capacity reductions. Such agreements are rare and apparently do not involve targeting.

In 1983, two such agreements were known to exist in the United Kingdom, and one was known to exist in West Germany. These agreements do not involve targeting, because they are allowed under provisions of the antitrust laws that apply equally to all industries, and there is no evidence that these agreements direct productive resources to the industries involved.

- The British policy of encouraging mergers apparently failed; this policy was discontinued in 1972.

In 1967, the British Government began to give financial incentives to encourage mergers through the Industrial Reorganization Corporation (IRC). The IRC's efforts apparently met with little success. In the automobile and machine tool industries, the IRC encouraged the formation of firms that later collapsed. It did encourage efficiency-promoting mergers in the ball-bearing industry, but these mergers might have taken place without the IRC. In 1972, the Government stopped offering these financial incentives and instituted a stricter antitrust law to regulate mergers.

- The West German Government rarely gives exemptions to its laws involving mergers.

Since 1973, West German antitrust laws have forbidden mergers that strengthen or create a market-dominating position. The Government has given only four special exemptions to this rule: two were given to further the Government's energy policy, and two were given to allow the rescue of financially troubled firms.

Targeting Practices For Specific Industries

- Aircraft and aerospace

France has used Government ownership as the primary mechanism to control and promote the growth of its commercial aircraft industry. The French Government also uses discriminatory Government procurement, encourages industry to "Buy French," and promotes joint international ventures. West Germany and the United Kingdom have both encouraged mergers to promote their industries. The United Kingdom also finances aircraft development costs. In addition to their individual programs, France, West Germany, and the United Kingdom cooperate on Airbus Industrie projects.

The estimated share of the U.S. market accounted for by EC-manufactured aerospace products rose from less than 1 percent in 1963 to 5.1 percent in 1982. The European aerospace industry has been more successful in its penetration of the world market than it has been in the U.S. market. Approximately one-half of the top 40 aircraft/aerospace manufacturers in the free world are located in EC member states, and together they accounted for more than 30 percent of the international market in 1982.

- Apparel

The EC member state firms supply medium- to high-priced merchandise in the U.S. market. High-fashion, expensive apparel is a small segment of the U.S. market. From 1967 to 1982, although the share of total imports increased in the U.S. market, imports from the EC stayed at approximately 1 percent of U.S. consumption.

EC producers have certain competitive advantages over U.S. producers. Within the EC market, EC producers benefit from duty-free entry, geographical proximity, and similiar style preferences. Also, in the high-fashion market segment, French and Italian producers known for their fashion leadership. In the more traditional market segment, however, both the United States and the EC compete against a growing number of low-priced Far Eastern producers.

o Automobiles and trucks

France, West Germany, Italy, and the United Kingdom have agreements with Japan for the voluntary restraint of Japanese exports. France has recently established the Fund for Industrial Modernization, which will make low-cost loans available to industry. French auto makers will receive 14 percent of the initial outlay of funds. West Germany's assistance to its industry has been primarily confined to funding R&D. The United Kingdom has provided substantial assistance to British-Leyland during its financial difficulties.

In general, European automobiles are perceived to be about equal, in terms of safety and passenger comfort, to U.S.-produced automobiles. However, in the U.S. market, availability of parts and cost of maintenance are major advantages for U.S. producers. In the international market, both the U.S. and EC motor-vehicles producers have lost market shares to Japanese producers over the past 20 years. Productivity rates in West Germany are about equal to U.S. rates, but rates in the United Kingdom and Italy are believed to be somewhat lower.

o Coal

The European Coal and Steel Community (ECSC) has controlled the coal sectors of all member states since 1951. The EC coal policy encourages domestic consumption of coal and provides subsidies to producers to reduce the price which is generally higher in Europe than in the United States. Since 1976, a special code of aids has regulated member state subsidies to producers.

The EC coal producers are not considered major sources of coal in the international market: their shipments are directed principally toward EC consumption, and their exports of coal are relatively minor. West Germany accounts for 77 percent of total EC exports of coal. From 1975 to 1982, total EC coal imports and EC coal imports from the United States both increased their share of the EC market.

o Computers and peripherals, and telecommunications

France began restructuring its telecommunications sector in 1976 by forcing certain foreign corporations to sell their French subsidiaries to French buyers. France has since nationalized its major telecommunications equipment manufacturers. France also uses discriminatory procurement by the state-owned telecommunications network and domestic subsidies to aid its electronics industries. The British Government aids its industry through R&D grants, sales assistance, and education grants. West Germany provides R&D support and financial assistance to its information technologies industries.

U.S. computers compete well in world markets and enjoy worldwide reputations for quality mainframe systems, software, and support systems. E.C.-based firms compete well with U.S. firms in certain product lines, but they do not offer the wide range of products offered by their U.S. counterparts.

European R&D in telecommunications is of high quality, although its scope is not as broad, nor is the scale of its operations as large as the U.S. telecommunications' industry. The U.S. manufacturers of telecommunications apparatus, also, have maintained a technological edge as well as superiority in design, manufacture, and installation of most types of products.

o Heavy electrical equipment

When buying equipment, state-owned electrical utilities, which are common in the EC, often have discriminated in favor of local producers. France and the United Kingdom also have attempted to rationalize their industries by initiating mergers.

Within the United States, domestic producers of heavy electrical equipment face a depressed market but little competition from EC producers. Imports from the EC were 2 percent of U.S. consumption in 1982. In part, due to depressed domestic demand, exports have increased as a share of U.S. producers' shipments.

o Machine tools

The EC has attempted to protect and encourage its machine tool industry by negotiating a voluntary restraint agreement involving imports from Japan and by giving subsidies to accelerate the production and use of machine tools. France developed plans to restructure its industry and provided subsidies for purchases. The French Government also encouraged private and public machine tool purchasers to "Buy French." Italy provided low-interest loans for machine tool purchases and grants for R&D projects. West Germany has provided R&D grants and domestic subsidies for robotics and other advanced technologies since 1974. The United Kingdom has a variety of Federal programs to upgrade technologies and applications in the machine tool industry.

Machine tool builders in the European Community have traditionally produced sophisticated machines with a worldwide reputation for quality. In general, U.S. metalworking machine tools are competitive in price and quality with most types of machine tools manufactured in the EC.

o Semiconductors

France has helped its semiconductor industry through grants for R&D and for the development of microprocessor applications. France has also encouraged mergers in the hope that they would lead to efficiencies. West Germany provides domestic subsidies to its semiconductor industry. The British Government began an explicit program to aid semiconductors in 1978 when INMOS, a manufacturer of integrated circuits, was created. Prior to that time, the bulk of British aid to the electronics sector went to the computer industry. Reportedly, British standards for integrated circuits and components have been used to protect the home market by creating significant barriers to imports.

EC semiconductor producers have not been a factor in the U.S. market, except in providing high-purity silicon wafers. They have been less innovative than U.S. and Japanese producers and have been unable to gain a significant share of the world market for these products. In fact, EC producers have accounted for only 10 percent of world production.

o Steel mill products

The ECSC, which now is part of the EC, has regulated the steel industry of all member states since 1951. The ECSC steel policy currently is aimed at modernizing, restructuring, reducing capacity, and reestablishing the financial viability of EC steel producers. All state aids are regulated through a code of aids which also establishes and enforces guide prices, production controls, and capacity controls. The EC declared a "state of manifest crisis" in 1980, thus empowering it to set price and production levels for producers. The EC also employs its Common External Tariff to protect domestic steel producers from foreign competition. In addition, the EC imposes import quotas and antidumping duties, negotiates voluntary restraint agreements with foreign suppliers, and fixes minimum import prices.

From 1978 to 1982, the share of imports from the EC in the U.S. market increased until it was 7 percent of U.S. consumption in 1982. In that year, the EC agreed to limit its exports of certain steel mill products to the United States until the end of 1985.

o Textiles

The EC has intervened directly to protect and develop the EC textile industry. The EC textile policy emphasizes protection of the home market and maintenance of internal competition. The Multifiber Arrangement provides the basis for controlling EC imports from third countries, and a code of aids adopted in 1970 helps maintain internal competition. France has designated its industry for specific restructuring and modernization efforts. West Germany does not provide direct subsidies for its industry. The United Kingdom had several schemes that aid investment and rationalization in the local textile industry. These schemes have been discontinued.

The EC producers of textiles have advantages over their U.S. counterparts in many sectors of the world market. The EC member states not only allow duty-free intermarket trade flows, they also have preferential duty arrangements with many countries outside the EC. Past cultural, social, and economic relationships play an important role in EC sales of textiles to Africa and Asia. However, when U.S. and EC producers compete in new markets (which are becoming important to the textile industry), they compete equally well in quality, price, service, and product diversity.

Targeting: Definition and Effects 1/

Definition of Industrial Targeting

Industrial targeting, as used in this study, means coordinated government actions taken to direct productive resources to help domestic producers in selected industries become more competitive. There are four elements to this definition: (1) there is coordinated government action; (2) productive resources are directed; (3) only selected industries are targeted; and (4) the purpose is to provide domestic producers in these industries with a competitive advantage. This definition is quite broad and includes defensive targeting, where the goal is to gain sales in the domestic market, as well as export targeting, where the goal is to gain sales in foreign markets. Nevertheless, the definition restricts the types of actions that are labeled as industrial targeting.

The first element in the definition restricts targeting to government actions. Strategies of individual firms, such as investment and marketing strategies, are not included. For example, a conglomerate may finance research on production in a particular industry out of its revenues in another industry. However, unless this strategy is at least encouraged by some form of government action, it is not industrial targeting, although the results might be the same. The important difference between the two is that targeted firms stand to benefit from government actions, whereas other firms only reap the rewards or suffer the consequences of their own actions.

The second element of the definition requires that productive resources be directed. Examples of government actions that direct resources are preferential tax treatment; government subsidies (either outright or in implicit forms such as loan guarantees or favorable terms on loans to finance investment, research and development, or export sales); special legal treatment (such as exemption from antitrust laws); government procurement preferences; and restrictions on imports. In some cases, a government statement of policy can cause resources to be directed to domestic producers in selected industries. For example, if a government announces its intention to underwrite losses of its local producers in a selected industry, competing producers in other countries may be discouraged from investing in the industry, but local producers in the industry are encouraged to invest more, even though no actual government payments may occur. The government announcement removes the risk to domestic firms, but in so doing, increases the risk to its foreign competitors.

The third element requires that only selected industries be directly affected. This element is important for distinguishing industrial targeting from more general industrial policies. However, there can be considerable latitude in the meaning of "selected industries." For example, one could consider exchange-rate manipulation by the government as targeting all industries that compete with internationally traded goods. Similarly, a broad program of export-financing subsidies could be considered targeting of all

1/ For a more extensive discussion of the definition and effects of industrial targeting, see U.S. International Trade Commission, Foreign Industrial Targeting and its Effects on U.S. Industries Phase 1: Japan, . . ., USITC Publication 1437, October 1983. October 1983, pp. 17-32.

export industries. Here we use "selected industries" in a narrower sense than all traded goods industries or all export industries. For example, although most government export-financing programs exist ostensibly to benefit all exporting industries, export loans tend to be concentrated in certain sectors. This element of the definition helps one to distinguish whether such a program qualifies as targeting or as a broader industrial policy, but it does not provide an absolute rule for making this distinction.

The fourth element requires that the purpose of targeting be to give domestic producers in the selected industries a competitive advantage. This element of our definition restricts our study to presumably "predatory" actions, where the goal of targeting is to increase domestic output in selected industries at the expense of their foreign competitors. Both defensive targeting and export targeting can be predatory, and predation might be consistent with a wide range of ultimate goals of industrial targeting. Ultimate goals of targeting can be to increase domestic employment opportunities, to improve the productivity of domestic labor, or to enhance overall domestic economic development and growth. Other goals include self-sufficiency in agriculture, raw materials or energy, or a strong national defense. These other goals usually are reached by increasing the international competitiveness of domestic producers in selected industries.

This element of the definition does not include government policies to increase production in sectors where there is too little private investment due to external factors--that is, where private investors cannot capture all of the benefits that come from their investments. These sectors include public goods such as education, the development of infrastructure to aid economic development (for example, roads, communication networks, public water, and sewage networks), medical research, and pollution control. Government action to direct productive resources into these sectors is not directly oriented toward increasing domestic output in selected industries at the expense of competing foreign producers.

Industrial Targeting and Overall Competitiveness of a Nation's Industrial Output

When examining the possible effects on U.S. producers of foreign targeting, it is important to distinguish between the effects on specific industries and the aggregate effects on all industries. Those who warn of the dangers of foreign industrial targeting fear that such policies can cause foreign industries to become more competitive at the expense of total U.S. industrial output, where the loss in U.S. industrial competitiveness is measured as the movement toward deficit in the U.S. industrial trade balance. Clearly, a foreign government can direct resources to a specific industry or group of industries to the detriment of competing U.S. suppliers. But the foreign government cannot use such actions to improve competitiveness of local producers in all industries, except for limited time periods. The following discussion explains how foreign targeting can affect the aggregate U.S. trade balance in manufacturing. The analysis points to the factors that need to be considered in gauging these effects.

First, consider the ways in which a country can improve its overall trade balance. To export more than it imports in any year, the country must either lend or give to foreigners the differences between the export receipts and the payments for imports. To run continuous surpluses, the country must maintain a constant net outflow of loans or gifts. This is true whether exchange rates are fixed or flexible. Under fixed exchange rates, an outflow of loans can consist of either net private lending to foreigners, or net official purchases of foreign exchange by the U.S. Treasury. If exchange rates are perfectly flexible, the outflow must consist entirely of private loans, because U.S. officials would not buy foreign exchange. Thus, an industrial policy that improves international competitiveness of all local producers is equivalent to a policy of promoting loans and gifts to foreigners.

Attempts to improve competitiveness of local industries through subsidies, tax breaks, or other stimuli cannot succeed across all industries, except to the extent that they promote international financial flows. Even if the stimuli came from a reduction in resources allocated to government, so that a subsidy or tax break to one industry did not merely amount to a tax increase for another, the exchange rate would automatically move to offset the total trade-balance effects of the stimuli. 1/

Even industrial policies that promote loans to foreigners can help the trade balance for only a limited time. If a country is making net foreign loans, it is also building up pressure for a time when it will have to either lose competitiveness or turn its loans into gifts. This is true even if the foreign loans are never fully repaid. Net loans in 1 year will provide a positive trade-balance stimulus for that year, but no further stimulus in later years. On the other hand, the receipt of payments of interest and principal on the loans will provide negative trade-balance stimuli in every succeeding year until the loans are repaid. Only by ever-increasing outflows of new loans can a country maintain a trade surplus for a number of years.

Although industrial policies can be targeted to help specific sectors, they cannot permanently affect the overall trade balance. Thus, industrial targeting must eventually harm the international competitiveness of nontargeted local producers by the same amount that it helps the targeted ones. For example, if a country's targeting helps its entire industrial sector, it must eventually harm the competitiveness of its nonindustrial sectors that compete internationally. Conversely, the only way foreign industrial targeting can cause long-term deindustrialization in the United States is by increasing the competitiveness of our nonindustrial exports, such as food and services.

This report concentrates on the effects of foreign industrial targeting on specific industries. It does not attempt to determine the effects on the overall international competitiveness of U.S. manufacturing. These overall effects are likely to be quite small due to the small foreign expenditures on targeting relative to total foreign manufacturing output. They may even be negative, since most foreign governments follow vigorous programs to aid local agriculture, and, as we have seen, these programs will decrease the competitiveness of foreign manufacturers.

1/ This reaction of exchange rates is well recognized in international agreements. A good example is the value-added tax with border tax adjustments used by the European countries. These countries levy a value-added tax on imports, and they rebate their own value-added tax on goods that are exported. Thus, they would appear to tax imports and subsidize exports. However, the General Agreement on Tariffs and Trade (GATT) recognizes the trade neutrality of these taxes and the fact that they do not encourage any incipient trade surpluses on the part of the European countries.

THE EUROPEAN COMMUNITY AND INDUSTRIAL POLICY

Introduction

The European Community (EC) targets the steel and coal industries, but in general does not target other industries. Although the EC gives aids designed to further certain broad industrial policy goals, such as promoting R&D, helping small- and medium-sized enterprises (SME's), and encouraging growth in depressed regions, these aids generally are not directed to specific industries. Furthermore, because the EC regulates the aids that its member states grant their industries, it somewhat constrains those states' ability to target.

The 1951 Paris Treaty gave extensive powers to the European Coal and Steel Community (ECSC) to intervene in the coal and steel sectors of the member states. The 1957 Rome Treaty gave extensive powers to the European Economic Community (EEC) to intervene in the agricultural economy of the member states, but such powers were not extended to the member states' industrial sectors. The EC's Common Agricultural Policy (CAP), with its price supports, export subsidies, and other forms of support, has no equivalent in the non-ECSC industrial sectors. However, the EC can and does influence the member-states' industrial policies and targeting practices. Although the Rome Treaty is silent on industrial policy, it does charge the EC to regulate, administer, and develop the common market. As a result, the EC employs a variety of treaty-based industrial policy instruments to aid certain industries and to pursue other industrial policy goals. Table 1 shows some of the purposes for which these instruments are used.

This section focuses on the EC's programs and policies that are designed to fulfill its treaty obligations to administer and regulate the common market but that also affect industrial policy. In 1967, the ECSC, the EEC, and the European Atomic Energy Community (EURATOM) were merged into the EC under a single Commission. 1/ The Commission, which consists of 14 members appointed by mutual agreement between the member Governments, is the administrative arm of the EC that proposes legislation and directives for action by the Council of Ministers. The Commission also regulates, administers, and enforces the laws of the common market. Commissioners act in the interests of the EC as a whole. They may not receive instructions from any national Government. The Council of Ministers, which consists of the direct ministerial representatives of the member Governments, is the chief EC decisionmaking body and has veto power over most important matters facing the EC.

Historical Overview

Since the founding of the ECSC, the coal and steel industries have been the most closely regulated industrial sectors in Europe. Whenever the Commission believes that a serious market imbalance or clear crisis requires regulatory intervention, it may subject the coal and steel industries to mandatory Europeanwide price, production, and trade restrictions. Under these circumstances, EC member states almost totally surrender their rights to independent coal and steel policies. The Commission exercised this power only once in 1980. Since 1980 the EC steel sector has remained regulated under this authority.

1/ There are 10 members of the EC: Belgium, Denmark, France, Greece, Ireland, Italy, Luxembourg, Netherlands, United Kingdom, and West Germany. Spain and Portugal are applicants for membership and may join in 1987.

Table 1.—Overview of industrial policy instruments used by the EC toward certain industries and other recipients

Recipients	Common External Tariff: Import quotas	Common External Tariff: Voluntary restraint agreements	Common External Tariff: Preferential trade accords	Common External Tariff: Minimum import prices	Common External Tariff: Antidumping duties	Common Competition Policy: Crisis cartel	Common Competition Policy: Manifest crisis	Common Competition Policy: Code of aids	Common Competition Policy: EC-approved member-state industrial aids	Common Competition Policy: Exemption from EC competition rules
Steel	X	X		X	X		X	X	X	
Coal								X	X	
Textiles and clothing	X	X	X		X	X		X	X	
Synthetic fibers					X	X		X	X	
Shipbuilding								X	X	
Information technologies										X
Energy										
Biotechnology										
Small/medium-sized firms										X
Infrastructure										

Recipients	Subsidized loans and grants 1/: EIB/NCI	EMS interest subsidies	ERDF	ESF	ECSC	EURATOM	Shared-cost contracts	R&D grants
Steel	X		X	X	X			X
Coal	X		X	X	X			X
Textiles and clothing	X		X	X	X			X
Synthetic fibers	X		X	X				X
Shipbuilding			X	X	X			X
Information technologies	X		X				X	X
Energy	X		X	X	X	X	X	X
Biotechnology	X						X	X
Small/medium-sized firms	X		X	X	X			X
Infrastructure	X	X	X					X

1/ Subsidized loans and grants are generally granted on a regional and nonsectoral basis.

Source: Compiled by the staff of the U.S. International Trade Commission.

The EC succeeded quite rapidly in creating the customs union and setting up the Common External Tariff (CET). It also made substantial progress in increasing intra-EC trade. The EC, however, has not achieved one of its chief initial goals -- to create European-scale firms capable of taking advantage of a vast continental market. Since the domestic markets of the individual member states were considered too small for efficient firms in certain sectors, it was hoped that a large common market, such as the United States has, would spur firms to take advantage of economies of scale, to expand production and sales, and to strengthen their competitiveness in export markets, particularly against the United States. Firms that have tried to operate on a European scale have not found the expected advantages. 1/ European firms are sometimes treated with suspicion by some member Governments. Moreover, EC economic integration has apparently not spurred industrial concentration and mergers between firms in different member countries, although important mergers and takeovers have occurred within them. Some members have tried to compete with U.S. multinationals by encouraging mergers between firms within their borders while discouraging cross-frontier mergers. When international mergers have occurred, they have largely been between EC and nonmember companies. 2/ In particular, U.S. and Japanese corporations, whether through direct investment, operation of affiliates in Europe, or agreements between U.S. and EC member firms, have often provided European business with more attractive opportunities for cooperation than have competing member state firms. 3/

It was not until July 1967 that a separate Directorate-General for Industrial Affairs was established in the Commission. This new Directorate was created because the EC felt that more work needed to be done to promote industrial integration. Prior to 1968, the EC was less concerned with industrial policy than with implementing the customs union and the CET. The Commission was loathe in the 1960's to initiate industrial policy programs because interventionist strategies were viewed as being inconsistent with the objectives of the common market. In the 1970's and 1980's, the Commission was forced to deal with the increasing number of defensive, unilateral restrictive trade measures taken by the member states, measures that violated the spirit, if not the letter, of the Rome Treaty. EC policy makers, faced with the threat of large declines in some industrial sectors, began to depart from traditional community reasoning that always condemned interventionist and protectionist measures. 4/

After 1967, the Commission realized that creation of the customs union alone would not prompt the cross-frontier mergers needed to create European-scale industries. Since the late 1970's, many in the EC have felt that Europe's industrial competitiveness has declined compared with that of the United States and Japan. For example, Europe's share of world exports in manufactured goods has declined compared with the U.S. and Japanese shares. The Commission felt that the EC lacked adequate productive investment. Unit labor costs in the EC rose faster than those in the United States and Japan

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1/ Steven Warnecke, ed., Industrial Policies in Western Europe, Praeger Publishers, 1975, pp. 153-158.

2/ Ibid.

3/ Economist, Sept. 17, 1983, p. 65.

4/ Lawrence Franko, European Industrial Policy: Past, Present, and Future, Conference Board of Europe, 1980, p. 44.

between 1960 and 1980. At the same time, the number of jobs in Europe has increased much more slowly than in the United States and Japan. In an attempt to improve the performance of European industry both at home and abroad, the Commission began proposing measures for Council action to improve the internal functioning of the common market so that European firms could derive more benefits from the large internal market than they have in the past.

During 1980-83, the Commission increased the number of its proposals designed to give the EC a common industrial strategy. The proposed strategy was something less than a common supranational policy but more than passive cooperation among the member states in industrial matters. The industrial strategy approach taken by the Commission is to allow European industry to derive the maximum advantages from the existence and size of the common market. The Commission hopes to remove intra-European impediments to cross-frontier mergers, and thereby encourage creation and growth of European firms. The Commission also wants European businesses to take fuller advantage of a continental-scale market with its 272 million consumers and to be able to compete for large public contracts open to them regardless of their national origin. According to the Commission, promotion of large European firms will enable them to benefit from the common market and to compete with large nonmember firms both at home and abroad.

Table 2 shows that many of the proposals submitted by the Commission for Council consideration have not been acted on. The Commission's proposals have concentrated on monetary integration, on eliminating barriers to intra-EC trade, and on research and development policy. In the absence of a common industrial policy, the EC currently has a patchwork of instruments and programs that affect industrial policy in the member states. Taken together, these instruments and programs do not constitute an industrial policy that is common to all of the member states in non-ECSC sectors. The EC's various instruments and programs which touch upon industrial policy are implemented in a more piecemeal than integrated fashion. Program leaders in the Commission who are responsible for the EC's various industrial policy instruments do not view their individual areas of competence as part of an overall integrated plan or design to build a common industrial policy for Europe. In other words, non-ECSC industrial policy in Europe largely remains under the purview of the national Governments.

Absence of a common EC industrial policy outside the coal and steel sectors is not surprising for the following reasons:

(1) Member Governments do not agree on the direction or even efficacy of a common industrial policy. They agree on common EC strategies only when it is in their own interest to do so and are generally unwilling to relinquish even a little control over their own industrial structure and policy to the EC.

(2) Industrial policy is interpreted by some of the member Governments as antithetical to the Rome Treaty's commitment to foster free trade in the EC. This point is underlined by Article 93 of the Rome Treaty, which empowers the Commission to approve member Government plans to aid domestic industries in need of financial support. When such aid violates the EC's strict competition rules, the Commission usually withholds approval. The Commission believes that state aids fragment the common market.

Table 2.--Inventory of EC Commission proposals for a common industrial strategy and Council response, 1980-83

Proposal/explanation	Policy goals	Council response
Monetary Integration.--Promote public and private use and international role of the European Currency Unit (ECU); strengthen the European Monetary System (EMS); create a European capital market.	Enable EC to achieve monetary stability, thereby promoting industrial integration; prevent erratic exchange-rate fluctuations; channel funds to develop productive activities to make greater contribution to economic growth.	None.--Greece and the United Kingdom are not participants in EMS. No consensus among members on promoting expanded usage of the ECU.
Internal Market.--Dismantle nontariff barriers to intra-EC trade, such as frontier checks, import formalities, company and tax laws, customs clearance proceedings, national preferences, marking of product origin, and subsidies among the many others. Establish European Cooperation Grouping (ECG), a new legal instrument under EC law to encourage cooperation between companies established under the law of different member states with particular emphasis on assisting small- and medium-sized firms.	Consolidate the common market, offer producers an open market so that they may benefit from economies of scale and boosted industrial efficiency; enforce Art. 30 of Rome Treaty, which prohibits barriers to intra-EC trade by challenging member states' import restrictions; establish through ECG a single set of rules governing cross-frontier cooperation common to all member states based on EC law.	Some--Council has adopted some Commission proposals for directives on dismantling nontariff barriers. For example, Council approved a directive on simplification of border formalities for the transportation of goods between member states. This new directive is expected to shorten the queues of lorries waiting at border posts.
Harmonization--Harmonize national industrial standards and norms on new products and institute a system for information and discussion of new industrial standards proposed by member governments, using the Commission as a forum. Technical norms and standards fixed at the national level inhibit producers from supplying markets in other member states.	Allow producers to take fuller advantage of a Europeanwide market and use it as a springboard to increase their share of the world market; give preferential treatment to European producers; and insure product quality and public safety.	Some.--Council has adopted some Commission proposals for directives to harmonize industrial standards and norms and has stated its commitment in principle to the need for more EC action in this area. Member Governments have had difficulty in agreeing to directives aimed at eliminating technical trade barriers because of a clause common to all of them concerning "Community certification" and whether it should not be applied to goods covered by the directives but originating in third countries. The clause could be used as a means of protection against imports from third countries. 1/

See footnote at end of table.

Table 2.--Inventory of EC Commission proposals for a common industrial strategy and Council response, 1980-83--Continued

Proposal/explanation	Policy goals	Council response
Public Procurement.--Open up national public procurement contracts to bidding by firms from other member states. Sealing off national public procurement threatens the unity of the common market. Threat will worsen unless growth of public sector in the member states is accompanied by an opening up of public contracts. Public supply contracts, which absorb roughly 10 percent of GDP in the member states, constitute an obstacle to the creation of a unified internal market, since they are concluded mainly with in national frontiers.	Create European firms to take advantage of a continental-scale, open common market economy and to compete with large Foreign firms in the European and international markets.	None.--This area remains a highly national issue with EC consensus difficult to reach. However public supply contracts in the member-states are subject to an EC directive dating back to 1978. Certain public supply contracts awarded by national, regional and local authorities must be published in the Official Journal of the European Communities (OJ) and are subject to common rules and procedures.
Common Commercial Policy.--Adopt a Community instrument strengthening the EC's common commercial policy to protect member firms against unfair trading practices used by firms in nonmember countries by imposing retaliatory measures.	Strengthen the ability of the EC to receive and respond to complaints lodged by member firms in a speedy fashion.	None.--Member Governments disagree over the the decision-making apparatus of the proposed instrument. Some members want to empower the Commission to receive complaints directly and decide on retaliatory measures when there is not a qualified majority in the Council. Others fear the proposed instrument will be used as a means of protectionism and want to subject it to strict guidelines excluding any protectionist slant.
Research and development.--Provide non-discriminatory access for all member firms to research activities carried out jointly by member government and/or EC aid; exempt from EC's competition rules (Art. 85) cross-frontier collaboration between member firms to sanction R&D cooperation; support R&D projects in new technologies, such as information technology, biotechnology, telecommunications and nuclear energy. Science-based industries, where the national markets are too small to provide a viable base and where national Governments provide a large part of the market and a majority of R&D funds, would benefit from EC-wide strategies.	Reduce costs; stimulate research; avoid duplication of research; speed up technological development and EC industry by sharing research work and findings; exploit the advantages offered by increased research effort at the European level; and develop pilot and demonstration projects to create diffusion of research findings through European industries.	Some.--Council approved funding for EC research and development projects in information technology, biotechnology and nuclear energy. The EC also provides financing for R&D projects for textiles and coal. Council has not approved financing for the Commission's proposed research program for 1984-87. The Commission's proposals for R&D funding for microelctronics and telecommunications have not been acted on by the Council.

See footnote at end of table.

Table 2.--Inventory of EC Commission proposals for a common industrial strategy and Council response, 1980-83--Continued

Proposal/explanation	Policy Goals	Council response
Small- and medium-sized enterprises.--Support small- and medium-sized firms by exempting them from EC competition rules, providing them with "innovation loans" through EC financial instruments, and permitting member governments to favor them in their public procurement policy.	Assist the development and growth of small- and medium-sized enterprises, as major employers of European workers, which contribute to the EC by their adaptability and flexibility in dealing with economic change.	Some.--Council approved aid to small- and medium-sized firms to help finance projects that associate companies from different member states, involve operations carried out at the EC level, or are open to all member states. Council has not acted on the Commission proposal to provide small- and medium-sized enterprises with innovation loans.

1/ The French government proposal for "Community certification" involves the definition of what constitutes a European product. The French maintain that an EC firm is one that manufactures its product within the Community. This definition excludes foreign-based multinational corporations that sell products in the EC which are made elsewhere and products that are assembled in the EC which include a large number of foreign parts.

Source: Completed by the staff of the U.S. International Trade Commission.

(3) Member Governments sometimes prefer to encourage their firms to trade with partners outside the EC for a variety of foreign policy and economic reasons. Such preferences may sometimes conflict with their participation in intra-EC industrial cooperation.

(4) The Rome Treaty does not specifically refer to industrial policy. The EC institutions are limited in what they can do to promote industrial cooperation among the member Governments. The EC can influence industrial policy only through certain treaty powers related to the functioning of the common market and the customs union.

(5) The Common Market is not fully integrated: nontariff barriers to intra-EC trade are growing as are the conflicts between the different economic and industrial policies pursued by the ten member Governments. Both stymie industrial cooperation at the EC level.

(6) Budgetary constraints make funding a common industrial policy difficult, particularly since the CAP already consumes 70 percent of the EC's revenues and a large portion of its energies. The difficulty in raising new sources of income and general budget consciousness among the financially strapped member Governments tighten constraints.

(7) Commission proposals often fail to be acted on due to the rule of unanimity on most important matters facing the Council. Full consensus on common industrial policy matters is very difficult to reach.

EC Industrial Policy Instruments

The Rome Treaty provides a number of industrial policy instruments that enable the EC to regulate, administer, and develop the common market. They include control of the Common External Tariff, foreign trade policy, the common competition policy (CCP), and subsidized loans and grants. 1/ Table 1 depicts the EC's application of these industrial policy instruments to various industrial sectors and other recipients in the member states.

The EC is empowered by Articles 113 and 116 to administer and adjust the CET (which includes adjusting tariff rates and imposing import quotas, minimum import prices and antidumping duties), to negotiate with nonmembers for voluntary restraint agreements and preferential trade accords, and to represent and act for the members in international organizations that are economic in nature. The EC's CET powers may be used to reduce or increase restrictions on imports from nonmember countries. The EC's role in trade policy is to strike a balance between the need to mitigate the social and political impact of industrial adjustment and the need to maintain a sufficient degree of external competition to insure that adjustment takes place. 2/ The EC is divided between members that are more inclined toward

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1/ For a review of the EC's CET, CCP, and foreign trade policy see J. Steenbergen, et al., Protectionism and the European Community, Antwerp, Kluwer Publishers, 1983.

2/ Stephen Woolcock, "Industrial Adjustment: The Community Dimension," Economic Divergence in the European Community, London, Royal Institute of International Affairs, 1981, p. 64.

trade protectionism and toward state intervention in the domestic economy and members that are more inclined to promulgate a liberal import policy and to shun state intervention. 1/

Tremendous pressure has been applied to the EC in recent years to offer home-market protection through the CET for ailing industries in the member states. Much of the recent thrust of the industrial policies of European Governments has been aimed at protecting producers from external shocks due to import competition or to declining exports. 2/ With its control of trade policy, the EC plays a central role in determining the length of the breathing space offered to such industries. 3/ Table 1 shows that the CET has been used to extend home-market protection to the steel industry and to the textile and clothing industries. This protection has been extended through import quotas, voluntary restraint agreements, minimum import prices, preferential trade accords, or antidumping duties. Table 3 shows the number of antidumping and antisubsidy investigations and actions taken by the EC during 1980-82.

The EC has signed the GATT agreement on government procurement, which was activated in 1981. The agreement requires government agencies to allow bidding by foreign firms on major governmental purchases. The agreement established common international procedures for providing information on bids, opening and awarding bids, and filing complaints. Signatories provide lists of those government entities whose purchases are subject to the code. The agreement does not apply to leased products, purchases of services, construction contracts, national security items, purchases by local governments, or national security items. The EC has its own set of rules and procedures for competitive bidding of public contracts awarded by national and local authorities in the member states. The EC's rules and procedures do not cover public transport authorities, the production, distribution, and transmission of water or energy, and telecommunications services.

The EC has considerable influence over industrial targeting in the member states through its competition policy powers. The EC's common competition policy, whose laws are superimposed on the member states, gives the Commission wide-ranging powers to halt abuses both by private firms and by national Governments. Outside the CAP, control of competition rules between the member states is the Commission's most powerful instrument.

The EC's competition powers are based on articles 3 and 85-94 of the Rome Treaty. Article 3 calls on the EC to "institute a system ensuring that competition in the common market is not distorted." Articles 85 and 86 of the Rome Treaty mandate the EC's antitrust policy but apply only to agreements between firms that affect trade and distort competition between the member states. They forbid cartels that fix prices, curb output, or divide markets. They also forbid firms that dominate a market to use their position to harm consumers or competitors. Article 85 confers wide-ranging powers to the EC to

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1/ For example, France has proposed higher EC tariffs to protect infant high-tech industries. West Germany and Denmark have opposed such higher tariffs.

2/ Lawrence Franko, op. cit., p. 1.

3/ Stephen Woolcock, op. cit., p. 59.

Table 3.--Antidumping and antisubsidy investigations, Jan.1, 1980-Dec.31, 1982

Item	1980	1981	1982
Investigations in progress at the beginning of period	71	29	46
Investigations initiated during the period	25	48	58
Investigations in progress during the period	96	77	104
Investigations terminated by:			
Imposition of definitive duty	8	10	7
Acceptance of undertaking	46	7	35
Change in the market situation	4	-	-
Determination of no dumping	7	7	3
Determination of no subsidization	1	-	-
Determination of no injury	1	6	6
Other reasons	-	1	1
Total investigations terminated during the period	67	31	51
Investigations in progress at the end of the period	29	46	53
Provisional duties imposed during the period	7	10	18

Source: "First Annual Report of the Commission of the European Communities on the Community's Anti-Dumping and Anti-subsidy Activities," Commission of the European Communities, COM (83) 519, Sept. 12, 1983, p. 2.

exempt agreements between firms that meet certain criteria. To combat structural problems in individual industries, the Commission may condone agreements that restrain competition if they relate to a sector as a whole, are aimed solely at achieving a coordinated reduction of overcapacity, and do not otherwise restrict free decisionmaking by firms involved. Article 86 has served as a springboard for the Commission's attempts to extend its powers of control over mergers between companies. Article 87 empowers the EC to adopt any appropriate regulations to enforce articles 85 and 86. For example, the EC can levy fines and lay down rules to ensure compliance with articles 85 and 86. Under articles 85 and 87, the Commission may invoke a crisis cartel to force agreements between firms to restructure, or it can regulate competition to implement an orderly restructuring program. The Commission has authorized crisis cartels in the iron and steel industry under the ECSC Treaty's article 66 provided that they do not hinder effective competition. The Commission claims to carefully monitor firms that abuse their dominant position and to apply article 86 judiciously.

Articles 92 and 93 govern state aids and give the EC extensive power to regulate industrial policy in the member states. The Treaty states that any aid that distorts or threatens to distort competition must be covered by appropriate EC policy. Article 92 stipulates that any aid granted by a member state that distorts or threatens to distort competition by favoring certain firms or production of certain goods is incompatible with the common market if it affects trade between the member states. It also outlines those aids that are compatible with the common market. These include aid having a social character, aid to promote economic development in areas where the standard of living or employment level is very low, aid to promote the execution of important projects of common European interest or to remedy serious disturbances in the economy of a member state, and aid to facilitate the development of certain economic activities or of certain economic areas where such aid does not affect trading conditions in a way that is contrary to common EC interests. Article 93 empowers the Commission to review all aid existing in the member states and to decide if a state aid is compatible with the common market under article 92 or if such an aid is misused. The Commission can order a member state to abolish or alter an aid. Noncompliance with the Commission's decision is referred to the European Court of Justice (ECJ).

The Commission, however, is not always successful in enforcing article 92 prohibitions. Some national subsidies may escape the Commission's scrutiny or may be implicitly tolerated by the Commission. The Commission has developed codes of aid for the steel, coal, textiles and clothing, synthetic fibers, and shipbuilding industries (table 1) that define permissible state aids. Without aid codes regulating Government subsidies to these industries, many of the aids given would be illegal under EC laws. The aid codes are designed to allow Governments to provide certain subsidies to troubled industries for only limited periods of time. When they expire and are not renewed, the EC's strict competition rules regulate state aids. A state aid must not lead to increased production capacity; it must be limited to individual cases where it is justified by the circumstances; it must be progressively reduced and linked to restructuring plans; and it must not transfer an industry or unemployment problem from one member state to another. The intensity of aid must be proportionate to the problem it is designed to resolve so that distortions to competition are kept to a minimum.

State aids that clearly benefit an industry in one member state to the detriment of a competing industry in another member state are often brought to the Commission's attention. In this fashion, the Commission may at least be able to keep abreast of the most visibly offensive state aids. Finally, the Commission announced in late 1983 that it would stiffen its control of state aids with member Governments that grant their industries unauthorized subsidies. The Commission has admitted that the incidence of illegal Government aids has been on the upswing due to the recession, high unemployment, and intense competition from newly industrialized countries. Member Governments are under pressure to provide subsidies to industries to avoid plant closures and worker layoffs. 1/ To enforce its latest attempt to crack down on illegal subsidies, the Commission announced it will demand the repayment of any unauthorized state aids from the member Governments to the EC

Table 4 shows the Commission's positions on state aids during 1970-82. The jump in the number of state aids considered by the Commission reflects the increased frequency of intervention by the member states in recent years due to the effects of the economic recession. Many requests for state aid approval undergo revisions to meet Commission guidelines. It appears that the Commission prefers to negotiate modifications of state aids to meet its criteria rather than forbid them.

Table 1 shows how the EC applies its policy instruments to assist and regulate five depressed industries in the member states: steel, coal, textiles and clothing, synthetic fibers, and shipbuilding. Currently, all of these industries, except the synethetic fiber industry, are regulated by EC codes of aid. Through these codes, the Commission permits certain state subsidies to the five industries provided they are accompanied by plans to restructure and reduce capacity and provided they follow a prescribed set of strict guidelines to avoid distorting trade among the member countries. Table 1 also shows how the EC uses the CET to provide home-market protection to the steel and textiles industries and the extent to which all of Europe's depressed industries benefit from the EC's various programs and instruments for subsidized loans and grants. The section on targeting techniques discusses the various methods used by the EC to assist its depressed industries. A brief discussion of the EC's shipbuilding industry illustrates how the EC applies its policies to one ailing industry.

The EC has adopted a set of guidelines for member state aids to the shipbuilding industry. The current directive governing aids to shipbuilding expires on December 31, 1985. However, given the worsening recession in the EC's shipbuilding industry, the Commission proposed to the Council that the aids code be extended until the end of 1986. Through the aids code, the Commission concentrates on minimizing national aid levels and requires that they be granted only if they contribute to necessary restructuring. The Commission seeks to monitor efforts to cut capacity in various member states to insure that the reductions are shared equitably as required by the code of aids. The Commission has authorized some member states to grant aid for limited periods and under certain certain guidelines. Under the terms of the current aids code, all planned state aid to shipbuilding must be aimed at serious restructuring to restore competitiveness, rather than saving jobs in the short term. Aids that increase capacity rather than productivity are strictly forbidden.

1/ Europe, November/December 1983, p. 48

Table 4.--Positions taken by the Commission concerning State aids, 1970-82 1/

Year	Total	Approved 2/	Procedures under art. 93(2) or art. 8(3) of Dec. 2320/81 ECSC 3/	Formal negative decisions published in the OJ
1970	21	15	6	1
1971	18	11	7	3
1972	35	24	11	3
1973	22	15	7	4
1974	35	20	15	-
1975	45	29	16	2
1976	47	33	14	2
1977	112	99	13	1
1978	137	118	19	-
1979	133	79	54	3
1980	105	72	33	2
1981	141	79	62	14
1982	233	104	129	13

1/ Excludes agricultural aids. The comparable figures following are for agricultural aids in 1982: Notified--170; no objections--165; procedures under Art. 93(2)--8; procedures under Art. 169--2; negative decisions--8; and notifications on which decisions pending--21. Also excludes transport aids.

2/ Some of these proposed state aids were changed after negotiations between the Commission and the member state concerned.

3/ Completed proceedings. These procedures may have resulted in acceptance of the original proposal, acceptance of a modified proposal, or withdrawal of the proposal by the member state after it became clear that the state aid in question was incompatible with the common market.

Source: Twelfth Report on Competition Policy, Commission of the European Communities, 1982, p. 113.

Aid from the European Regional Development Fund (ERDF) and the European Social Fund (ESF) has been granted to various shipbuilding firms or regions in the member states. ERDF aid for investment in shipyards amounted to only 3.5 million European Currency Units (ECU's) or $4.0 million during 1975-81. Through the Social Fund, the Commission approved applications for aid from the shipbuilding industry for 11.5 million ECU's ($16 million) in 1980 and 9.5 million ECU's ($10.6 million) in 1981.

Subsidized Loans and Grants

The EC provides a wide variety of subsidized loans, loan guarantees, and grants shown on table 1. 1/ Subsidized loans and grants to aid the EC's less developed regions through the European Investment Bank (EIB) and ERDF enable the EC to assist member states in their own regional policies. Grants from the European Social Fund offer assistance to redundant workers in the member states by offering reemployment and resettlement financing. EURATOM loans fund projects which reduce the EC's dependence on energy imports and improve energy use and efficiency. EURATOM loans are discussed in the R&D section. The ECSC provides an extensive set of loan and grant programs to assist the coal and steel industries in the member states. These programs are discussed in the section on EC targeting techiques. The EC's grants for research and development touch upon all industries listed in Table 1 as well.

European Regional Development Fund.

The ERDF was founded in 1975 in response to EC enlargement and to the need to correct the EC's regional imbalances. Managed by the Commission, the ERDF makes grant aid available to member states by partially reimbursing them for their own regional expenditures. It is the only EC body established solely to assist development in the EC's less developed regions. The Fund is used to support, coordinate, and steer the regional policies of the member states for the benefit of the EC as a whole. The ERDF makes grants for investment projects, such as infrastructural development, in the member states' eligible regions. The ERDF's assistance is not intended to replace member states' own regional development efforts, but to complement them. Payments from the ERDF are made only after payment of the national aids; the member states' payments are used as a basis for calculating ERDF assistance. Other requirements for receiving ERDF grants stipulate that (1) aid be used in an area or project already assisted by the member Government; (2) a minimum of 10 new jobs be created; (3) the amount of investment be more than 50,000 ECU's; and (4) investment not be completed by the date on which the Commission receives the grant application. 2/

1/ Report from the Commission to the Council and The European Parliament on the Borrowing and Lending Activities of the Community in 1982, Commission of the European Communities, Brussels, COM (83) 527 final, Sept. 14, 1982, p. 15. Total borrowing by EC organizations to fund the Community's loans and grants rose from $1.1 billion in 1973 to $4.9 billion in 1982.

2/ European Regional Development Fund Eighth Annual Report, October 1983.

ERDF aid is divided into quota and nonquota sections. The quota section, which consumes over 90 percent of ERDF expenditures, provides an allotment of aid per eligible member state to finance industrial, tourist, and service sector projects and to help finance infrastructure run by public authorities. The nonquota section, first implemented in 1982, assists regions that are experiencing serious industrial decline or are adversely affected by EC policies. The nonquota section combines a range of initiatives to improve the economic environment for firms and, in addition, assists SME's. The following are two examples of these special measures: (1) promotion of development of the EC's Mediterranean regions in anticipation of EC enlargement to include Spain and Portugal; and (2) development of alternative economic activities in areas seriously affected by restructuring in the textile, clothing, steel, and shipbuilding industries. The amount of aid expended by the nonquota section of the ERDF amounted to 90.5 million ECU's ($88.7 million) in 1982.

A total of 1.8 billion ECU's ($1.76 billion) was expended in 1982 among 3,277 investment projects under the quota section. The industry and service sector projects accounted for $230 million, or 13 percent, infrasztructure projects accounted for $1.57 billion, Or 87 percent of total Fund expenditures. Grants to infrastructure projects in 1982 again exceeded the 70-percent ceiling laid down by the Commission.

Table 1 shows that ERDF grants under the quota and nonquota sections are made across a wide variety of industries. The ERDF grants are not targeted to specific firms or industries, but are used primarily to aid economically troubled regions in order to help redress the EC's overall regional disparities. The ERDF funds projects that make a clear contribution to the development of the region in question and that do not violate the EC's competition rules.

European Investment Bank (EIB) and the New Community Instrument (NCI)

Since its inception in 1958, the EIB has lent over 16 billion ECU's for industrial, energy and infrastructure investments in the EC member states. 1/ The EIB is a nonprofit banking institution set up by the Rome Treaty as an integral but independent body within the EC. 2/ A permanent dialogue between the EIB and the Commission helps them both to keep abreast of information on regional development. An EIB representative participates as an observer at EC meetings involving regional policy. One of the EIB's directors is the Commission's Director-General for Regional Policy. EIB's Board of Governors is composed of the finance ministers from all of the EC member Governments. It appoints and removes members of the Board of Directors and lays down the Bank's lending and credit policies. The Board of Directors, assisted by a permanent staff, grants loans and guarantees and fixes interest rates on EIB loans.

EIB grants long-term loans from its own resources and furnishes guarantees to enterprises, public authorities, and financial institutions for projects which (1) stimulate economic development of less prosperous regions; (2) are of common interest to several member states or the EC as a whole; and (3) lead to modernization or conversion of enterprises to overcome structural

1/ European Investment Bank, European Investment Bank: Twenty-Five Years, 1958-1983, Luxembourg, 1983.

2/ For a description of EIB's history, functions, and activities see Sheila Lewenhak, The Role of the European Investment Bank, London, Croom Helm, 1982.

problems or creation of new business activities. The majority of EIB loans are made for industrial investment (to increase competitiveness), for development of energy supplies to cut the EC's high dependence on imported oil (the EC depends on imported oil for 47 percent of its needs), and for improvement of public infrastructure.

The bulk of the funds required for financing EIB's lending operations are borrowed in financial markets from individual nonmembers and from international markets. The EIB then uses these funds to make loans for investment projects in the member states that meet its criteria.

The EIB's lending rates closely follow interest rates in the markets where it obtains its funds. The Bank makes a loan only if it is guaranteed by a member state or by another first-class credit risk. The period of the loan and the 2 to 5 year grace period before capital repayment begins is dependent on the type of project and the prevailing conditions of the capital market. Loans to industry are typically for periods of 7 to 12 years. Infrastructure projects could qualify for 20-year loans. The EIB can offer borrowers low interest rates because its own excellent credit rating enables it to obtain funds at the best possible market rates, and because it works on a nonprofit-making basis and therefore is able to make loans at advantageous interest rates. 1/

In 1979, to provide the EIB with new resources, the Commission initiated the NCI, a new method for the EC to raise money to finance special projects in the member states. 2/ The EC uses the NCI to borrow in international and national capital markets and then transfers those funds to the EIB. The EIB acts as an agent for the EC by lending funds raised through the NCI to finance projects deemed eligible by the Commission. These projects include (1) investment aimed at rationalizing energy uses and replacing oil by other sources; (2) investment in infrastructure that is of regional or EC interest; and (3) starting in 1982, productive investment by SME's. These enterprises receive 7 or 8 year loans. Infrastructure projects receive 20-year loans.

During 1979-82, approximately 2 billion ECU's in loans were financed from the NCI. Currently, the Commission is contracting loans for up to 3.0 billion ECU's ($2.9 billion) from the NCI to be issued in two installments. 3/ NCI combines the EC's own credit standing and borrowing capability with EIB's experience in project evaluation. Procedures for NCI loans are similar to those which apply to loans from EIB's own resources. The main difference is that for each application, the Bank must first ask the Commission for its opinion within the Council's guidelines on usage of the funds. Once eligibility is established, the Bank's staff then carries out its own customary project appraisal and the Board of Directors decides on loans and fixes conditions.

1/ Finance from Europe: A Guide to Grants and Loans from the European Community, Commission of the European Communities, London, July 1982, p. 8.
2/ The NCI is also known as the "Ortoli facility," after Commission Vice-President Francois-Xavier Ortoli, who initiated the concept of NCI.
3/ European Investment Bank: Twenty-five years, 1958-1983, European Investment Bank, Luxembourg, 1983, p. 19.

The EIB and the European Monetary System (EMS) have an arrangement concerning interest subsidies on loans to Italy and Ireland. The EMS was set up in 1979 to encourage investment and trade among the member states through greater stability in exchange rates. EMS members agreed to help the economies of the less prosperous participants, Italy and Ireland, by providing subsidies on loans made both by EIB and through the NCI. An interest subsidy of 3 percent annually is paid by the EC budget for investment projects in Italy and Ireland. The subsidies are intended to increase the amount of loans to these countries for priority investments. During 1979-83, 181 loans were made under the EMS, valued at 4.0 billion ECU's. During this period, interest subsidies paid out amounted to 800 million ECU's covering 20 percent of all loans. 1/

In 1982, total loans granted by the Bank within the EC amounted to 4.2 billion ECU's ($4.11 billion), of which $3.4 billion came from the EIB's own resources, and $774 million came from the NCI. 2/ In 1983, total EIB loans granted within EC amounted to 5.5 billion ECU's ($4.9 billion)--$3.83 billion came from EIB's own resources and $1.07 billion came from the NCI. EIB lending for industrial modernization grew from $1.39 billion in 1982 to $1.56 billion in 1983 and provided considerable financing for SME's. 3/

EIB provides global loans, or lines of credit, to other financing organizations that work at the regional or national levels. These organizations use EIB funds to make a series of smaller loans, subject to EIB's normal intervention criteria, for its own clients' investments. These institutions have their own personnel in the field who have detailed local knowledge. Thus, by working through them, the EIB can reach a range of smaller investments than it could efficiently deal with directly. The interest rate charged by participating financial organizations on loans made from EIB global loan funds includes a charge for exchange-risk cover and, where applicable, the risk they carry in guaranteeing the loan to the EIB. Interest rates are fixed for the period of the loan, which are usually for 7 to 8 years. There are no capital repayments during the first 2 years. 4/

In terms of industrial investment, the EIB has channeled 1.0 billion ECU's ($980 million) to eligible projects under the broad heading of "modernization and conversion." For example, the EIB has provided investment support loans to finance (1) the car industry in southern Italy; (2) modernization and/or conversion of the steel industries in France, the United Kingdom, West Germany, and Italy; (3) the manufacture of cancer treatment drugs in Italy; (4) satellite-tracking and launching techniques in Italy and

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1/ Report from the Commission to the Council and The European Parliament on the Borrowing and Lending Activities of the Community in 1982, Commission of the European Communities, Brussels, COM (83) 527 final, Sept. 14, 1983, p. 34.

2/ Of the NCI loans, 54.3 percent was allocated for infrastructure, 12.6 percent for the energy sector, and 33.1 percent for the development of SME's.

3/ European Report, Jan. 24, 1984, p. 3. Approximately 3,250 small- and medium-sized firms were helped to set up, expand, or modernize.

4/ Commission of the European Communities, Finance from Europe: A Guide to Grants and Loans from the European Community, London, July 1982, p. 9.

France; (5) the conversion of a typewriter factory in Italy to manufacture electronic word-processing machinery; (6) rationalization to help companies succeed in certain segments of the textile and apparel sectors; and (7) development of telecommunications infrastructure in Italy, France, United Kingdom, and Ireland. 1/

Table 1 shows that EIB and NCI loans are widely distributed throughout EC industries. The vast majority of these loans, approximately 85 percent, finance infrastructure projects; the remaining 15 percent directly finance investment in industries. As is the case with other EC aid-giving or aid-approving rules, the loans must not favor specific industries and must not increase production capacity in industries where there are structural problems.

European Social Fund (ESF)

Since 1958, the EC has managed the ESF, which is designed to improve employment opportunities for workers by financing reemployment and resettlement. For example, the ESF helps to retrain displaced textile workers. The ESF aid is also granted for redeployment of workers in the coal and steel industries and to finance social measures in support of the restructuring of the steel industry. The ESF was reorganized in 1971 with a new commitment to give differential assistance to regions with particular employment problems. In 1982, the ESF expended 1.5 billion ECU's ($1.47 billion). 2/ Table 1 shows that grants from the ESF have been distributed across a wide range of industry sectors.

Industrial Research and Development

The EC funds research and development projects, in whole or in part, covering coal, steel, textiles, footwear, data processing, information technologies, biotechnology, nuclear and solar energy, nuclear fusion, and telecommunications. 3/ Most of the EC's research programs are carried out through contracts placed by the Commission with firms and research institutions in the member states. The EC says its R&D aid is not granted on an industry or sector-specific basis but serves several general objectives. For example, such aid serves to increase productivity, manage resources, and avoid duplication of research in science and technology. The EC's research and development policy is designed, in many cases, to fund and conduct

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1/ The EIB has been active in providing loans to telecommunications projects because it views telecommunications as infrastructure. Most of the EIB's loans to telecommunications have been for infrastructure projects, such as telephone communications in poor regions of the EC. However, loans granted to the French postal, telephone, and telegraph authority in 1980 were for advanced telecommunications sytems. Similarly, EIB loans to the United Kingdom assisted the updating of the Post Office's computerized telecommunications system. Sheila Lewenhak, op. cit., p. 175.

2/ Commission of the European Communities, Sixteenth General Report on the Activities of the European Communities, 1982, p. 125.

3/ The EIB provides loans and ERDF provides grants for many infrastructure projects in the member states involving telecommunications. However, the Commission's proposal for increasing EC spending and intraEC R&D cooperation in telecommunications has not met with affirmative Council action. The telecommunication industry is still tightly controlled by most member Governments.

research that is beyond the financial means of individual member states. The Commission also insists that all EC-funded research must be "precompetitive," that is, it must be of a preliminary nature with only long-term prospects for commercial application and exploitation. 1/

The EC countries have shown an increasingly active interest in research and development. Although accounting for 6 percent of the world's population, Western Europe accounts for 20 percent of total world R&D expenditures. The EC countries combined have over one million active researchers, conducting R&D work valued at $40 billion. Over the past ten years, the EC member Governments' combined R&D budgets have increased by one-third. The EC member Governments still spend 16 percent less on civil R&D than does the United States, but they spend twice as much on commercial innovation as Japan. 2/

Table 1 shows that the EC's R&D activity stretches across all industries. However, the EC spent only 600 million ECU's ($588 million) on R&D in 1982, up from 70 million ECU's ($83.5 million) in 1974. The EC's 1982 R&D spending amounted to just 2 percent of the combined research spending by the member states. The money spent on research by the EC in 1980 amounted to 1.4 percent of member Governments' R&D expenditures and 1.7 percent of their civil R&D expenditures. 3/ In nominal terms, the research appropriations of EC institutions have recorded an annual average growth rate of 18.5 percent over the 1975-1981 period, well above the corresponding rate for all EC countries, which amounted to 12.5 percent. In 1981, R&D spending by the EC was 24 percent higher than in 1980, a rate of increase above the average for the 1975-1981 period. 4/

The EC has been interested in industrial and energy research since the creation of the ECSC and EURATOM in 1957. Up to 1974, when the EC launched its first research program, it had no general responsibility for R&D, but only responsibilities in certain sectors, such as coal, steel, and nuclear energy. In 1974, the EC opened all nonmilitary aspects of research and development to funding.

One major area of EC research policy is the promotion of its industrial competitiveness, notably in the steel sector and in the new-technology industries. The Commission believes that R&D cooperation at the EC level will enable European industries to improve their competitiveness in international trade and to exploit the advantages offered by such cooperation on a continental scale. The Commission's proposals for increased R&D cooperation at the EC level are considered a part of its common industrial strategy

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1/ By promoting cross-frontier research collaboration at a "precompetitive" stage only, the EC does not risk breaking any of the Rome Treaty's strict antitrust rules.

2/ Economist, Apr. 2, 1983, p. 94.

3/ Government Financing of Research and Development, 1975-82, Statistical Office of the European Communities, Luxembourg, 1983, p. 106.

4/ Ibid.

outlined in Table 2. Officials in the Commission's Directorate-General for Research and Development, however, believe that the EC's R&D programs are independent of the Commission's proposed plan for a common industrial strategy. They do not believe the EC's R&D programs are part of a broader strategy to improve Europe's industrial competitiveness. EC funding for research in this area has been increasing during the past 7 years. This trend is expected to continue given the Commission's active lobbying of the Council for increased funding for R&D projects.

The Commission has proposed a new scientific and technological R&D strategy known as the "Framework Program for Research." The Commission's proposal would cost 3.8 billion ECU's during 1984-87. Two of the goals of the Commission's framework program are to promote industrial competitiveness and to improve the management of energy resources. Projects that promote industrial competitiveness include those projects that apply new technologies and products for traditional industries and those that develop new technologies. Projects that improve the management of energy resources include those that develop nuclear fission energy, controlled thermonuclear fusion, renewable energy sources, and rational use of energy. Out of the proposed budget of 3.8 billion ECU's, 1.0 billion ECU's (28 percent) is earmarked for promoting industrial competitiveness and 1.8 billion ECU's (47 percent) is earmarked for improving the management of energy resources.

The Commission has put forth three main priorities in this new program for increasing industrial competitiveness: (1) develop harmonized industrial standards to foster creation of an EC-wide market for industrial goods; (2) modernize traditional industries by applying new technologies, such as lasers, new materials, and computerized construction methods in a variety of sectors; and (3) promote new technologies, such as information technology and biotechnology. The Commission feels that if the EC is to keep up with its foreign competitors, it must coordinate the national research programs and collaborate in joint efforts to master basic technologies, such as microelectronics, especially integrated circuits; software engineering; office automation; computer translation systems; and industrial robots.

The Council has approved in principle the Commission's framework program for 1984-87 but has yet to approve funding for most of the projects involved. If funding is made available under the Commission's budget, 4 percent of the EC's budget will be devoted to research by 1987, compared with 2.6 percent at present.

A description of the EC's coal, steel, and textiles R&D projects is in the section on targeting techniques. A discussion of the EC's efforts in information technology, biotechnology, and energy research and development follows.

The EC and Information Technologies

The EC and member-state firms have developed a new approach to R&D in the information technology (IT) industry called European Strategic Program for Research and Development in Information Technologies (ESPIRT). 1/ ESPRIT is

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1/ The IT industry refers to those industries whose products process or transmit information.

designed to help the EC's IT industry improve its competitiveness in internal and world markets. ESPRIT began on January 1, 1983 with a 1-year pilot program followed in 1984 with the first 5-year phase of a 10-year program. The Commission contributes 50 percent (or more in some cases) to the cost of individual research projects. ESPRIT categorizes the IT industry into five areas where R&D aid has been planned: advanced microelectronics, software technology, advanced information processing, office automation, and computer-integrated manufacturing. 1/

Background on ESPRIT

The EC's trade balance in IT products fell from a $1.17 billion surplus in 1975 to a $5.0 billion deficit in 1980. One estimate puts the EC's trade deficit in IT products at $10.0 billion in 1982. Eight out of 10 personal computers sold in the EC are imported from the United States. Over 90 percent of video recorders sold in the EC are made in Japan. 2/ European-based integrated circuit manufacturers supply 30 percent of their own home market and represent only 13 percent of world production. 3/

The EC's growing IT trade deficit and its technological lag behind its major competitors is largely attributed to the low level of cross-frontier business and research collaboration among the member countries, absence of venture capital to promote creation of small- and medium-sized high-technology firms, duplication of national research efforts, nontariff barriers to intra-EC trade, and public procurement preferences for domestic firms by their member Governments. The Commission feels that member Governments and companies cannot individually reverse the widening trade deficit in IT products because their scale of resources committed to R&D is too small to be effective. There is a consensus in Europe that IT is an area where EC industry must be competitive enough to win a larger share of its own and foreign markets. The EC believes that IT will be its largest manufacturing industry by 1990. 4/ As a result, representatives of the largest IT companies in the EC asked the Commission to find a solution to the problem. They warned that unless a major cooperative industry program can be mounted at the EC level, most or all of the current IT industry could disappear in a few years' time. 5/

1/ "Prospects for the Development of New Policies: Research and Development, Energy and New Technologies," Bulletin of the European Communities, May 1983, p. 30.

2/ Economist, June 18, 1983, p. 65.

3/ "Proposal for a Council Decision Adopting the First European Strategic Program for Research and Development in Information Technologies," Commission of the European Communities, Brussels, June 2, 1983, p. 1.

4/ Bulletin of the European Communities, op. cit., p. 26.

5/ This group of IT firms includes ICL, Plessey, and GEC in the United Kingdom; Nixdorff, Siemens, and AEG-Telefunken in West Germany; CII-Honeywell Bull and CGE in France; 1 Philips in the Netherlands; and Olivetti and STET in Italy.

Objectives of ESPRIT

The chief goal is to achieve technological parity with, if not superiority over, the United States and Japan. ESPRIT is aimed at providing the European IT industry with the technological base it will need to achieve this goal. Most of the ESPRIT projects must be shared companies or research centers from two or more member states. The EC goal here is threefold: (1) foster cross-frontier industrial R&D collaboration among member firms and research centers enabling them to benefit from a large common reservoir of knowledge that cannot be duplicated at the national level; (2) create common IT standards, a fuller common market for IT products, and a stronger and more competitive industry; and (3) avoid wasteful duplication of national R&D efforts.

Pilot phase of ESPRIT

The objective of the pilot phase, which was in effect from January 1, 1983 to December 31, 1983, was to prepare the Commission and the participants for implementation of the first 5-year phase of ESPRIT beginning in 1984. The pilot phase was conducted on a small scale. The EC paid 11.55 million ECU's ($10.23 million) to cover 50 percent of the cost of the research projects. The pilot phase involved 16 general research areas under which the Commission selected 38 individual projects out of 200 research proposals. Preliminary reports indicate a generally positive response from the more than 80 participating companies and institutions, although problems arose over language barriers and divergent working methods. Table 5 depicts the 16 general projects areas and their budget allotment.

Current phase of ESPRIT

The first 5-year phase of ESPRIT (1984-88) will cost a total of 1.5 billion ECU's ($1.3 billion), of which $650 million will be paid directly by the EC. ESPRIT expenditures will be about 6 percent of the total individual research effort currently carried out in the EC member states in IT. EC funding of IT research and development activities is small relative to the overall IT industry's R&D expenditures of $5.0 billion annually in the member states.

ESPRIT is divided into Type A and Type B projects. Type A projects include large- to medium-range R&D activities requiring large infrastructure and resources. Type A projects are viewed as the strategic backbone of ESPRIT and will receive about 75 percent of ESPRIT funds. The Commission may not subsidize more than 50 percent of each Type A research project. Type B projects rely mostly on flexible infrastructure and on individual thinking rather than on a systems approach. Type B projects require fewer resources than Type A projects. Such projects could range from very long-term R&D to relatively short-term, highly specialized R&D. The Commission may pay over 50 percent of Type B projects if the contractors have limited financial resources, as may be the case with SME's and research institutions. Inclusion of Type B projects in ESPRIT is important to a country such as Belgium, whose companies and research institutions possess scientific capability but not the financial capability of large companies such as Siemens or Philips. Type B projects receive 25 percent of ESPRIT funding.

Table 5: ESPRIT pilot projects and budget
(in millions of ECU's)

Item	Amount
Advanced Microelectronics:	
Advanced Interconnect for VLSI	1.3
High Level Computer Aided Design for Interactive Layout and Design	2.5
Software Technology:	
Portable Common Tool Environment	3.1
Formal Specification and Systematic Program Development	1.1
Software Production and Maintenance Management System (SPMMS)	.7
Advanced Information Processing:	
Advanced Algorithms and Architecture for Signal Processing	.8
Knowledge Information Management System	1.5
Interactive Query System	.5
Office Automation:	
Functional Analysis of Office Requirements	1.0
Multimedia User Interface at the Office Workstation	2.4
Local Wideband Communication Systems	1.4
Office Filing and Retrieval of Unstructured Information	.5
Computer Integrated Manufacturing	
Design Rules for Computer Integrated Manufacturing Systems	2.3
Integrated Microelectronics Subsystems for Plant Automation	1.9
Process and Production Control Based on Real-Time Imaging Systems	1.4
Information Exchange System	.6
Total	23.0

Source: Commission of the European Communities, Communication to the Council on Laying the Fundamentals for a European Strategic Program in Research and Development in Information Technology: the Pilot Phase, COM (82) 486, Aug. 13, 1982.

Commercial application and exploitation of ESPRIT research

According to the Commission, the general guidelines for the commercial application and exploitation of ESPRIT research are the same in principle as those of other EC-financed projects. Ownership and right to exploitation of any information and industrial property rights resulting from work under contract (called foreground information) normally resides with the contractors who make the invention. However, the Commission stipulated a few additional rules for the pilot phase. These rules will probably apply to the first 5-year phase of ESPRIT. Arrangements between contractors must ensure that each participant in the same project has guaranteed and privileged access to the results of the work done by the others. Access for a project team to foreground knowledge generated by another team working on a different project within ESPRIT will also be arranged under privileged conditions if such information enables better or quicker results to be obtained from the project that needs it. To promote improved competitiveness in the EC, companies that did not participate in a specific project, but that have the ability to use its results and wish to do so, will have the opportunity to acquire the rights. The terms will be negotiated on a commercial basis taking into account the contributions of the originating parties as well as those of the EC.

The Commission has insisted that all ESPRIT projects must be "precompetitive," i.e., commercial application and exploitation of the results of research projects must occur in the long term. ESPRIT projects are designed to assist in the research and development of IT products and processes in their initial stages only. The Commission feels that R&D in information technology is sufficiently removed from product development and marketing to avoid commercial rivalries among participants.

ESPRIT contractors are required to develop or exploit the results of their research findings within a "reasonable amount of time." In case neither the contractors nor their licensees have taken adequate steps to exploit these results within a reasonable period of time, the contractors must grant to EC applicants either licenses or user rights to develop, manufacture, use, or sell the results of their ESPRIT research. Contractors must also supply, when required and against additional financial compensation, technical and manufacturing information subject to certain provisions.

The Commission's emphasis that ESPRIT participants must exploit their research findings within a reasonable amount of time, appears to contradict, to some degree, the "precompetitive" nature of ESPRIT research.

Policy toward nonmember firm participation in ESPRIT

Conflicting interpretations over nonmember firm participation in ESPRIT have emanated from Europe. The Commission characterizes its position on nonmember firm participation in this way: "Since many companies have complex relations with non-EC companies which might in some circumstances benefit ESPRIT, any proposal involving third parties and third party technology will be assessed on its merits and judged by its overall benefits to ESPRIT." 1/ A

1/ Commission of the European Communities, Communication to the Council in Laying the Foundations for ESPRIT: the Pilot Phase, August 13, 1982.

Commission-organized committee will judge the share and input of any foreign participation in ESPRIT. Foreign companies may be allowed to participate if their operations employ and produce in Europe and if their proposed research is conducted in Europe. A member Government energy official reportedly insisted that only European-owned companies and institutions should be eligible for ESPRIT grants. However, EC Industry Commissioner Davignon and his spokesman apparently convinced those concerned about foreign participation in ESPRIT that although EC-owned companies will be the major beneficiaries, other foreign-owned companies should not be excluded, provided the projects involved are carried out in the EC. If a foreign subsidiary in Europe has expertise to offer ESPRIT participants, its participation will not be ruled out. An ITT subsidiary in Belgium was reported to have participated in the pilot phase oF ESPRIT. It remains to be seen if foreign companies will be permitted to participate in the first 5-year phase since the Commission is still in the process of receiving applications for research grants, and decisions have yet to be made.

The EC and Biotechnology

In 1982, the Commission started a new research program in biotechnology aimed at promoting EC industrial competitiveness. Biotechnology is defined as the application of scientific and engineering principles to the processing of materials by biological agents to provide goods and services. Aid is carried out by means of shared-cost research contracts concluded between the EC and the member states' private or public organizations, such as national laboratories. The EC's goal in subsidizing such research is to stimulate biotechnology work in fields where the EC's major rivals already have a good lead. The projects involve both specific research and training of EC scientific personnel. These projects are designed to make basic discoveries in modern biology, so that the EC can match the rest of the world in formulating improved agricultural and bioindustrial products. During the first phase of this research program, from 1981 to 1983, the EC contribution amounted to $7.0 million and was confined to research on food production. Research in the second phase, from 1983 to 1985, will cost the EC $6.0 million and will extend to all industrial fields, especially pharmaceuticals.

EC and Energy

Approximately 72 percent of the EC's research funding goes to energy R&D, which includes conventional, nuclear and other sources of energy. Energy R&D expenditures by the 10 member Governments amount to approximately 11 percent of their combined R&D spending. Energy has been given a high priority by the EC due to Europe's high level of import dependence in this sector.

The EURATOM Treaty calls on the members to develop research and encourage industrial initiatives in the nuclear fields. 1/ The EURATOM Treaty empowers the Commission to make loans for projects that reduce the EC's dependence on

1/ For more information on EC cooperation in nuclear research see Peter Cofffey, ed., Main Economic Policy Areas of the EC, The Hague, Martinus Nijhoff Publishers, 1983, pp. 40-42.

oil imports by promoting the use of nuclear energy. 1/ According to article 4 of the EURATOM Treaty, "the Commission has the responsibility of promoting and facilitating nuclear research in the member states and of complementing them by research and training programs undertaken by the EC." Loans are extended to nuclear power stations and industrial installations based on the nuclear fuel cycle. 2/ The EIB administers EURATOM loans. The loans cover up to 20 percent of the total cost of a project. Interest rates and repayment periods reflect prevailing capital market conditions at the time the loan is made. In addition, the EC funds demonstration projects that employ new methods to improve energy efficiency and to exploit solar and geothermal energy sources and the liquefaction and gasification of coal. The cost of these demonstration projects are shared by the EC and the contractor. The EC finances between 25 and 49 percent of the total cost for energy saving projects; for alternative energy demonstration projects, the EC finances up to 40 percent. The terms of EC financing are dependent on the extent to which the project may be exploited commercially. The EC also provides loans to assist projects that help to secure EC supplies of oil and natural gas. Eligible projects must promote technological development in oil and gas prospecting, extracting, storage or transport. The EC provides up to 40 percent of the cost of these projects, which are usually up to 3 years in duration. Financing is repayable if the project is exploited commercially. Finally, a small amount of aid is available from the EC to encourage prospecting in the member states. 3/

EURATOM sponsors the Joint Economic Research Center (JRC) with research labs in four member states to conduct EC-funded research in solar energy. The Joint European Torus (JET) project in thermonuclear fusion is another EC-coordinated and EC-funded research undertaking. JET is an experimental plant established in the United Kingdom in 1978 to develop a fusion reactor. According to the Commission, the JET project holds out the long-term promise of abundant energy supplies but with research efforts that will be long and costly. The Commission maintains that no commercially exploitable research is to be expected from the JET project for some decades. All fusion research in the EC is coordinated by the Commission. A majority of such research is funded jointly by the EC and the member Governments. 4/

1/ Commission of the European Communities, Report from the Commission to the Council and the European Parliament on the Borrowing and Lending Activities of the Community in 1982, COM (83) 527 final, Sept. 14, 1983, p. 9. Between 1979 and 1982, the Commission loaned $784 million for EURATOM projects. On Mar. 5, 1983, the Council empowered the Commission to contract EURATOM loans up to $1.96 billion.

2/ Commission of the European Communities, Finance from Europe: A Guide to Grants and Loans from the European Community, London, July 1982, p. 10.

3/ Ibid.

4/ According to Peter Coffey, some EURATOM research programs have not succeeded. Member states have generally preferred to pursue national policies and to maintain market divisions. Most of the common research has remained at a preindustrial stage. As a result, the main needs of industry have had to be supplied by U.S. technology. In recent years, the Commission has been trying to develop an EC energy strategy. One result of this has been to extend nuclear research under the EURATOM Treaty to non-nuclear sectors. Peter Coffey, op. cit., p. 41.

Small- and Medium-Sized Enterprises (SME's)

The EC has an active interest in promoting the business development of SME's in the member states. The Commission's contends that SME's are a source of and a vehicle for innovation, especially in the fields of IT, biotechnology, energy technology, flexible manufacturing systems, and new materials. The EC views SME's as being adept at exploiting new technology in its early phases and at expeditiously developing and marketing new products. At the same time, SME's have limited access to capital markets, limited fixed assets, and inadequate security to offer creditors. Therefore, the EC has developed a policy to funnel aid to SME's. The Commission has a unit that helps firms, especially smaller firms, to enter into cooperation agreements or cross-border mergers. The year 1983 was declared by the European Parliament the "Year of the Small- and Medium-Sized Enterprises" to focus more attention on the value of SMEs' contributions to EC economic development. 1/ Table 1 shows that EC policy towards SME's primarily involves exemptions granted from EC competition rules for certain cross-frontier business collaborations and grants and loans from the various aid-giving bodies.

The Rome and Paris Treaties forbid agreements between companies that seek to restrict competition. However, the Commission does not object to agreements between firms with small turnovers and a limited share of the market. To help SME's to innovate, to extend their buying and selling power, and to achieve economies of scale, the Commission permits them, under special arrangements, to enter into exclusive representation and specialization agreements. New arrangements are being drawn up to allow smaller firms to enter into certain kinds of patent licensing agreements. In addition, blanket exemptions to the agreements ban have been granted in areas especially useful to SME's. These include joint-market studies, use of statistics, research and development, joint advertising, and subcontracting. These exemptions have recently been extended to include joint manufacturing agreements between SME's. The Commission investigates state aids to industry to guard against distortions of competition that would harm SME's. The Commission is favorably disposed to the SMEs' receiving appropriate aids, such as access to credit, research and development, and technical assistance in business and management methods. Furthermore, the Commission allows member Governments' public procurement policies to favor SME's, provided there is no national discrimination.

The EC has been increasing its loans and grants to SME's. The EIB reserves the largest share of its global loans for SME's. 2/ Through financial institutions, priority is given to firms with fewer than 500 workers which are not dependent on a larger company for more than one third of their capital. In 1982, the EIB made 1,200 loans, covering up to one half of the capital cost of projects. Their total value was 455 million ECU's

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1/ Commission of the European Communities, Small- and Medium-sized Enterprises and the Craft Industry in the EC, Brussels, 1983.

2/ The bulk of the EIB's global loan finance has been used to assist the integration of SME's into regional development plans and large-scale industrial projects. Many small loans in southern Italy, for example, have gone to small chemical and synthetic textile manufacturers, to motor car component firms, and to producers of glass and ceramics. These loans paralleled efforts to promote the development of large chemical and plastic complexes, metal works, and construction projects in southern Italy. Sheila Lewenhak, op. cit., Chapter 12.

($446 million), compared with 54 million ECU's ($61.6 million) in 1977. Other global loans from the EC include loans for reconversion of coal and steel areas, that can be especially useful to SME's, and loans from the NCI which began in 1982. Between 1975 and 1982, ERDF gave grants to 4,000 small projects which cost no more than $10 million each. These grants represented 94 percent of ERDF's investment in the manufacturing sector. The ERDF can pay up to 20 percent of an industrial, craft, or service project in struggling regions, so long as at least 10 jobs are created or maintained and the national Government also contributes. From 1979, projects that cost less than 50,000 ECU's have been accepted as part of global applications. ERDF action is increasingly directed towards developing the local resources of poorer regions, notably through SME's. In addition, money is being invested to improve the economic environment of regions badly hit by the decline of the steel and shipbuilding industries, regions likely to experience difficulties because of the southern enlargement of the EC, and regions on the border of Ireland and Northern Ireland. Here again, SME's are expected to benefit from an infusion of ERDF aid. In these areas, apart from normal investment aids, the ERDF supports projects that aim to encourage the spread of new technology, pass on market information, and improve access to financial markets. It also sponsors the employment of management or market consultant firms and the establishment of joint services by groups of companies. This kind of aid is soon to be extended to new areas, notably those affected by the decline of the textile industry. At the same time, it will be supplemented by an "economic stimulus" aid. This represents a new initiative in the field of public assistance. The aim is to forge closer links between business at the grassroots and the public authorities, distributors of new technology, and potential markets. Finally, the ERDF is going to develop its interest rate subsidy programs to make existing loans more attractive, whether they come from the EIB, NCI, or ECSC. The first development of this kind is expected in areas affected by the decline of the steel industry. SME's are expected to benefit from these new initiatives.

The ESF may subsidize an SME's modernization of its management and production techniques. The ESF gives priority to job creation undertakings by firms employing fewer than 25 persons. It also cofinances programs and pilot projects for management and professional training, with a bias toward the needs of SME's. The ESF is planning to aid SME's in two ways: (1) by retraining workers to cope with new technologies; and (2) by giving technical help and advice on marketing, mobilization of capital, accounting, business and employment law, and job creation prospects through local development officers who can advise SME's that lack large and specialized staffs of their own. In research and development, existing EC programs are underway in industrial sectors where SME's are well represented, such as in leather and footwear and textiles and clothing. ESPRIT is open to SME's dealing in IT.

In 1983, the Commission proposed to the Council its plan to open a new loan program, called a "European innovation loan," for all SME's suffering financial hardship. 1/ A special NCI tranche of 100 million ECU's ($90 million), in addition to grants totaling 20 million ECU's ($18 million) from budget resources, would be used to finance this proposed loan program. The proposed program must await Council action.

1/ Commission of the European Communities, Proposal for a Council Decision Empowering the Commission to help finance Innovation with the Community, Brussels, June 7, 1983.

French Industrial Policy and Targeting

Since the Second World War, the French Government has probably been more directly involved in allocating resources within its economy than the other major Western European Governments. This involvement has often taken the form of government planning and ownership of major industrial and service sectors.

The end of World War II saw French industry mostly destroyed and the output of the economy at less than half the 1913 level. However, from this extremely poor beginning, the French economy sprang back to become the fastest growing of the EC member states' economy during the period 1946-1973. Much of this rapid growth was to be expected. The population by and large maintained the high skill levels characteristic of developed countries, whereas the stock of capital in the country had fallen to levels characteristic of developing countries. The consequent need for investment set the stage for an extended period of high employment growth. Also, France, like West Germany and Japan, was able to take advantage of new technology in the process of rebuilding. Nevertheless, many observers attribute much of France's postwar growth to the French system of economic planning. 1/ These observers argue that this system, which took the form of consensus building among Government, labor, and industry, helped to overcome the pessimistic economic outlook that prevailed in France in the late 1940's and early 1950's.

The French system of indicative planning consists of planning through a loose framework of Government initiatives. This type of planning, in sharp contrast to Soviet-style command planning, is based on consultations among all the major economic decisionmakers--representatives of industry, trade unions, Government departments, and the Planning Commission. 2/ Although the Government prepares the plan after consulting with the private sector, the plans are not binding on private business. However, the Government actively promotes the plan's objectives through administrative guidance and through the use of credit, taxation, and subsidies.

Although this method of planning lasted until the early 1970's, the scope of the plans changed as the economy was rebuilt, as France became more integrated with the rest of Europe, and as French world commerce grew. For example, the first three plans (1946-61) have been described as plans to reconstruct the war-damaged economy. The first plan (1946-51) directed public and private capital to key damaged industries to open bottlenecks in the supply system. The plan specified six basic sectors for attention--coal, steel, transport, agricultural machinery, cement, and electricity. The second and third plans (1952-61) were designed to convince pessimistic economic agents that growth would continue. The high growth that took place under these first three plans is often held up as proof of the effectiveness of the planning process. Of course, determining how much these plans actually contributed to growth is difficult. In fact, the plans may even have retarded growth to some extent by distorting resource allocations from those activities that might have received investment funding in an unfettered market.

1/ Saul Estrin and Peter Holmes, French Planning in Theory and Practice, G. Allen and Unwin, 1983; C. J. F. Brown, "Industrial Policy and Economic Planning in Japan and France," National Institute Economic Review, August 1980, pp. 59-75; Peter A. Hall, "Economic Planning and the State: the Evolution of Economic Challenge and Political Response in France," Political Power and Social Theory, 1982, pp. 175-213.

2/ J. R. Hough, The French Economy, Holmes and Meier, 1982.

Unlike the first three plans, which were usually limited to specific supply problems, the fourth plan (1959-65) was more ambitious. It provided investment targets and a growth strategy for the entire economy. The fourth plan also contained detailed disaggregated projections and provided a consistent framework for medium-term economic policy. One of the reasons for the plan's growing complexity was the importance of foreign trade to the previously sheltered economy. At the time the plans were formulated, the Government felt that the tariff cuts anticipated from the Kennedy round of trade negotiations and from the advent of the EC required greater government intervention.

By the time of the fifth plan (1966-70), the question of the international competitiveness of French firms had become paramount. U.S.-based multinational companies were perceived as a threat to French firms in both domestic and foreign markets. The planners believed that several constraints on French industry reduced their ability to compete against these and other foreign producers. Specifically, they focused on the lower rates of investment growth in French industry compared with such growth in other advanced countries and also on the small size of most French firms. Consequently, the fifth plan contained three new tactics: (1) to encourage mergers and cartels, (2) to exempt certain firms from regulations to obtain certain desired behavior regarding investment, including spending on research and development (R&D), and (3) to concentrate capital investment in a small number of high-technology projects. The last tactic led to the policy of promoting and sometimes creating one or two firms of international scale in each industry. These firms could be either in the public sector (oil, chemicals, aircraft, and construction) or in the private sector (steel, computers, and shipbuilding).

The sixth (1971-75) and seventh (1976-80) plans were much more modest than their predecessors. They called for the state to continue to intervene in a small number of high-technology sectors including computers, electronics, telecommunications, machinery, and chemicals. Some of these efforts were at least technically successful--Concorde supersonic transport, Airbus, and the the high-speed trains--but their commercial success at best remains in doubt. Many other projects failed both technologically and commercially. For example, neither the Plan Calcul to establish an internationally competitive computer industry nor the Plan Siderurgie to modernize and rationalize the steel industry have yet succeeded.

The eighth plan (1981-85) was delayed by the Socialist Party victory in the 1981 elections. However, an interim plan was announced in 1982 and 1983, reinforcing the Government's objectives of modernizing basic industries, increasing competitiveness in process industries, and promoting new technologies.

Industrial Policy

In addition to economic planning, another initiative begun before the Second World War and accelerated rapidly afterward was the direct Government ownership of industrial and financial companies. A major justification of the early postwar nationalizations was the former pro-Vichy involvement of the companies. During 1944-47, the Government nationalized the electricity, gas, and coal industries, the Bank of France, four deposit banks, 32 insurance companies, and the Renault car company. From this beginning, the French Government has continued to participate directly and indirectly in private industry and in financial institutions through trade, tax, financial, and competition policies.

Industrial policy: 1945-73

In the early years, rebuilding the economic infrastructure and changing basic industries were the main objectives of government industrial policy. However, other objectives have gradually predominated. In the 1960's, for example, the Government became involved in many large-scale high-technology projects for reasons of national security and prestige. Another reason for the emphasis on large-scale projects in the 1960's was that the French economy was beginning to feel the competitive effects of the common market and the tariff reductions of the Kennedy round. French industry was competing increasingly with foreign products both at home and abroad. This period saw the formulation of large-scale government-financed projects in atomic energy and aerospace, and also the development of large-sector programs such as Plan Calcul in computers and Plan Composants in semiconductors. In addition to Government financing, these sector programs included R&D subsidies, preferential procurement in Government contracts, and trade protection.

Industrial Policy: 1973-81

Another major period of industrial policy change came with the oil price shock of 1973 and 1974, and the resultant painful economic adjustment it made necessary for oil-importing countries. This adjustment has probably been more difficult for France than for other EC member states, because at the time of the oil price increase, France was importing approximately 75 percent of its primary energy supplies compared with 55 percent for the average EC member state.

The years since 1974 can be divided into three distinct periods. The first period began with the oil price rise and extended until 1976. During this period, the Government pursued expansionary policies leading to the rise in Gross Domestic Product and industrial production. However, the increased consumption of this period led to a deterioration in the balance of payments and a devaluation of the franc.

The second period began when Prime Minister Barre took office in 1976. His new Government was dedicated to reducing state involvement in the economy. His methods included strengthening private French firms at the expense of the public sector and freeing and modernizing the financial markets, setting up indirect controls over economic growth and inflation, and easing the heavy hand of the state on the private sector. The primary tool of industrial policy during this period was a system of specialized financial intermediaries directed by Government committees. These intermediaries provided low-interest loans primarily to up-and-coming high-technology companies, but also to badly injured heavy industrial enterprises, especially steel producers. The economic performance of this period was poor, with continued slow growth and high unemployment. This poor performance contributed to the downfall of the Barre government in May and June 1981 and the election of the socialist party's President Francois Mitterand.

Industrial policy since 1981

The third (and present) policy period began with the election of the Mitterand Government. His government reversed the economic policies of Prime Minister Barre. It nationalized 36 banks and 5 large industrial groups and increased the Government's role in the French economy. 1/ Under the current industrial policy, the Government expanded its direct participation in the economy through nationalized companies. The current Government hopes to use the large nationalized companies as engines to encourage growth and modernization and to reconquer the national market.

The 1981 nationalizations

Although the 1981 nationalizations greatly increased the Government's ownership of industry, extensive ownership of private-sector companies is hardly new in France. Even before the 1981 nationalizations, the Government owned key enterprises in petroleum, computers and aerospace, telecommunications, electricity, gas, railroads, seaports and airports, potash, lignite, and coal. According to one estimate, from the Second World War until the mid-1970's, the state acquired majority shareholdings in about 500 industrial and commercial companies and a minority shareholding in over 600 others. 2/ When 36 banks and 5 major industrial groups were nationalized in 1981, the Government greatly extended its already-large holdings in industry. Now more than one-half of all industrial investment takes place in state-owned companies, and nearly one out of every four French workers is employed in these companies. Data summarizing the effect of the 1981 nationalizations are displayed in table 6.

Twelve competitive sector groups.--Together, both the new and old nationalized companies are supposed to form 12 key competitive sector groups. For each group, the Government provides financing from the budget and from the banking sector, and in exchange, negotiates a "plan" with the group. The plan links the group to the state's larger economic policies on research, employment, training, and foreign trade.

Because only one of the companies (Compagnie Generale d'Electricite) had a profit in 1982, and because of under-investment in the years before the nationalizations, financing the 12 groups has been a costly undertaking for the Government. In 1982, the Government contributed 9.9 billion francs ($1.3 billion) to the 12 groups. In 1983 this was increased to 20.53 billion francs ($2.3 billion). Of this, 15.16 billion francs ($1.7 billion) came from the Goverment's budget, and the remainder was to be provided by the nationalized banks and from other sources. The details of the 1983 funding are presented in table 7. The level of funding in 1984 is expected to remain about the

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1/ The five newly nationalized industrial groups are Pechiney Ugine Kuhlmann, Thomson-Brandt, Compagnie Generale d'Electricite, Saint-Gobain, and Rhone-Poulenc.

2/ Jean Chardonnet, La Politique Economique Interieure Francaise, Dalloz, Paris, 1976.

Table 6.--Extent of State-owned enterprises in the French Economy before and after the 1981 nationalizations

(In percent)

Item	Industry including energy	Industry excluding energy
Employment		
State-owned enterprises before 1981 nationalization	10.8	6.4
State-owned enterprises after 1981 nationalization	22.7	18.9
Sales		
State-owned enterprises before 1981 nationalization	15.7	8.9
State-owned enterprises after 1981 nationalization	28.9	24.4
Exports		
State-owned enterprises before 1981 nationalization	12.3	12.2
State-owned enterprises after 1981 nationalization	31.4	32.1
Value added		
State-owned enterprises before 1981 nationalization	17.3	8
State-owned enterprises after 1981 nationalization	29.9	22.5

Source: Andre de Lattre and Michel Pebereau, Politique Economique de la France, Primiere Partie, Institute d'etudes Politique de Paris, 1983, p. 117.

Table 7.--Proposed funding of 12 nationalized groups, 1983

Group	Activity	Budgetary endowments	Participatory: shares and loans 1/	Other
		Billion francs	Billion francs	Billion francs
Sacilor------------	Steel--------	3.51		
Usinor-------------	Steel--------	2.95		
Pechiney Ugine Kuhlman.	Aluminum-----	2.40		2/ 0.25
Rhone-Poulenc------	Chemicals----	1.20	0.60	
Renault------------	Automobiles--	1.00	.65	
Thomson Brandt-----	Telecomunnications.	1.10	.75	3/ .40
CII-Bull-----------	Computers	1.50		4/ .50
Cdf-Chimie---------	Chemicals	.82	.70	
Companie Generale d'Electricite.	Heavy electrical.	.13	.77	
Saint Gobain-------	Glass		.75	
SNECMA-------------	Aeroengineering.	.30		
EMC----------------	Mining-------	.25		

1/ Participatory loans are low-interest loans from the nationalized banks whose repayment hinges on the firm's performance, i.e., if the firm does poorly, repayment is not required. Participatory shares represent a means by which the more profitable nationalized companies can once again raise funds on the stock market. They are nonvoting shares issued by the companies and bought by individuals. Interest is in part fixed and in part indexed to the variation in the company's turnover.

2/ Reduced electricity prices from Electricite de France.

3/ Remittance of penalties owed to P.T.T.

4/ Research credits.

Source: U.S. Department of State, "Management and Financial Problems of the Nationalized Industries," Aug. 17, 1983.

same. Also, as in the 2 previous years, the largest recipients will be the steel, chemical, and automotive enterprises.

Nationalizations and industrial policy.--Whereas before 1981 industrial policy emphasized indirect financial measures to promote industry, since 1981, industrial policy has involved an extensive direct role of the Government in the economy. Another major change from the previous Government seems to be a movement away from emphasizing primarily new-technology growth industries as recipients of state aid toward a broader orientation where new technology growth industries share the center stage with older established industries. These fundamental changes have resulted in an industrial policy with three main thrusts: modernizing the basic industries, increasing the international competitiveness of processing industries, and promoting new technologies.

Modernizing the basic industries.--For these sectors (steel, shipbuilding, petrochemicals, and nonferrous metals) industrial policy aims to promote capacity shrinkage and modernization. For example, the French steel industry has been an especially large recipient of state aid since 1976 and 1977 when the EC's steel-restructuring efforts were begun. In 1978, Prime Minister Barre partially nationalized the two largest companies, Usinor and Sacilor, and took over the long-term debt of approximately 40 billion francs. In subsequent years until 1981, the Government tried to promote a gradual capacity shrinkage of the industry by providing for early retirements of workers, high severance pay, financial assistance to help immigrants return home, and investments to create new jobs. The total cost of these efforts is estimated to have been about 30 billion francs. The effect of the effort was to reduce employment from 160,000 workers in 1975 to 97,000 workers in 1981. Since 1981, Usinor and Sacilor have been completely nationalized. The government's 1982-86 steel plan called for new shutdowns and a cut of 12,000 jobs. The plan also envisioned a corresponding labor adjustment cost of 2 billion francs per year and modernizing investments of 9 billion francs for Usinor and 8.5 billion francs for Sacilor during 1982-86.

Increasing the international competitiveness of processing industries.--For these sectors (textiles, clothing, footwear and leather, and machine tools), industrial policy seeks to promote associations of domestic producers to improve the quality and functioning of the sector, to increase R&D spending, and to promote new investment. An important example is the 1982 clothing/textile plan of the French Government. This plan called for seeking stronger protection from imports by strengthening the Multifiber Arrangement of the GATT, reducing social security taxes for employers, promoting modernization, and providing financial aid to enterprises. Regarding modernization, the French Government has launched a promotion campaign for the sales of French goods and has established an association for the textile industry to coordinate joint research and other projects to benefit the sector. The Government has also committed 1.2 billion francs to the effort.

Promoting new technologies.--For the data-processing, aerospace, microelectronics, telecommunications, and bio-technology sectors, industrial policy aims to channel more government and banking system resources to research and development activities and to promote large-scale technological development programs so that French new-technology industries will be better positioned to compete against the United States and Japan. The principal program in these areas is the Programme Plurame en Faveur de la Filiere

Electronic, a plan to expand the telecommunications, computer, electronics, and related industries. The plan is to increase the annual growth in national electronics production from 3 to 9 percent, reverse the unemployment trend in other industries by creating new jobs, improve the balance of payments, and maintain technological independence through development of integrated circuits and computer technology. Regarding the resources for carrying out the plan, the Government proposes to increase the proportion of official R&D electronics funding and to launch a nationwide campaign to promote the usage of electronics in all areas of industry. Further, the state's plan calls for investing 140 billion francs in the electronic sector, 85 billion francs from the private sector, and 55 billion francs from the Government. Most observers agree that these targets are unlikely to be met.

The tools of industrial policy

The most important tools of current French industrial policy are large Government expenditure increases for R&D, and guidance of the nationalized banking network's resources to the targeted industries. In addition, the Government has changed the tax code to promote savings, and it has increased restrictions on certain imports. Furthermore, the Government has continued to promote inward foreign investment to give France continued access to foreign high-technology activities.

Home-Market Protection

France has changed dramatically from being one of the most protected markets for manufactured products in Europe to being one of the most accessable. The turning point was the advent of the EC in 1958. Before this, foreign trade was a smaller proportion of national income in France than in any other major European country. High tariffs, quotas, and a generally inward-looking policy orientation prevailed. However, from 1958 to 1973, the French market was opened rapidly. For France, joining the EC and reducing trade barriers was considered the cause of increased industrial specialization, interindustry trade, and increased concentration. 1/

Trade is now very important to the French economy. In 1981, French exports plus imports were equivalent to one-third of the national income. About one-half of French foreign trade is with other members of the EC. West Germany is by far the most important single trading partner of France. The largest non-EC trading partner is the United States. In 1981, the United States accounted for 5 percent of France's exports and 8 percent of its imports.

Aside from energy, most French trade deficits occur in industrial capital goods such as engineering products and industrial electronic equipment (table 8). Another area of significant import penetration is household appliances. France's manufacturing export strength rests primarily in automobiles, shipbuilding, aircraft, and weapons.

1/ Hough, Op. Cit., pp. 197-205.

Tariff and non-tariff barriers to trade

France's tariffs are established by agreement with the other members of the EC. Also, France is restricted from taking certain protective trade actions because it is a signatory to the GATT. Within the EC, France has usually favored protecting certain industries. For example, in the 1977 Multifiber Arrangement negotiations, France led the EC in broadening the coverage of the agreement. France also took the lead in establishing a common EC policy to protect and restructure the European steel industry.

One major exception to the above policy of acting in concert with the EC is the French restriction on imports of Japanese autos. In 1977, the French Government decided to restrict the share of automobiles from Japan to 3 percent of national French automobile sales. 1/ The French authorities enforce this restriction through administrative guidelines to importers. In April 1982, the measure was extended to French overseas territories, where the share of car imports from Japan was limited to 15 percent of internal sales.

Government procurement

In 1980, the French public procurement market was worth $51 billion. The central Government represented $19 billion, local government $7.6 billion, and the nationalized industries (such as Air France, the railroad corporation, public utilities, and state aircraft manufacturers), about $24 billion. Since 1981, the amount of procurement included in the nationalized sector has probably at least doubled.

The French Government has used procurement policies in the past to help national firms in certain industries achieve efficient market size and to force reorganizations of domestic producers. These procurement practices work directly and through the nationalized firms. There are many examples of both.

Direct: Compagnie Internationale pour l'Informatique (CII).--CII was greatly aided by the sectoral plan for computers, called the Plan Calcul, initiated in April 1976. The Plan Calcul's objective was to establish a national champion in the computer industry. 2/ To this end, the French Government proposed to channel more than 1 billion francs to CII over 5 years

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1/ As a general rule, a member Government's bilateral trade arrangements with foreign suppliers must be sanctioned by the Commission. In certain cases, when a bilateral arrangement between a member and foreign country does not affect the interests of other EC members or the orderly functioning of the common market, such an arrangement is not challenged.

2/ The creation of Plan Calcul can be traced to two events from the 1960's. The first was the 1964 takeover, of Machines Bull by General Electric, leaving France without a substantial French-controlled computer firm. The second was the refusal by the United States in 1966 to authorize an export license for the sale of a Control Data Corp. model 6600 computer to the French Atomic Energy Commission. The U.S. Government feared that the computer would be used in the French thermonuclear weapons program.

In 1975, CII was forced to merge with Bull which had been acquired by Honeywell when General Electric left the computer business. The resulting company, CII-Honeywell Bull, was nationalized in 1981 and is now CII-Bull.

Table 8.--French imports as a share of apparent consumption

(In percent)

Item	1970	1979	1980	1981
Intermediate goods	25.8	32.7	33.4	34.0
Ferrous ores and metals	22.0	31.1	31.8	32.2
Nonferrous ores and metals	50.0	54.2	55.0	57.4
Construction materials	12.4	18.1	18.6	18.6
Glass	16.0	30.9	32.1	33.9
Basic chemical products	36.0	55.3	55.6	58.4
Paper and board	19.2	27.2	28.1	29.2
Rubber and plastics	16.1	28.7	29.0	29.5
Industrial capital goods	26.1	43.5	47.6	47.7
Mechanical engineering products	29.2	44.8	49.9	50.1
Industrial electronic equipment	21.8	42.0	48.2	49.6
Household appliances	28.5	43.4	44.4	46.4
Motor cars and other road transport equipment	17.9	27.8	30.6	32.2
Shipbuilding, aircraft, and armaments	15.7	24.4	29.7	31.0
Consumer nondurables	11.2	23.7	24.9	26.2
Parachemicals and pharmaceuticals	8.4	14.3	15.3	15.4
Textiles and clothing	11.8	32.2	34.1	36.7
Leather and footwear	13.3	36.6	39.2	42.8
Wood products, furniture, etc.	14.6	24.6	26.2	27.6
Printing and publishing products	7.6	12.7	12.7	13.3
Total	20.6	32.6	34.6	35.6

Source: Institut National de la Statistique et des Etudes Economiques, input/output tables and quarterly national accounts.

in equity investments, loans, and research subsidies to support the company. In addition, the state agreed to give preference to CII products in computer purchases by Government agencies.

Indirect: Electricite de France (EDF).--EDF was created in 1946 out of three large electric power companies, and the Government has controlled the company's purchasing decisions since then. In the early 1970's, the Government used its control over the purchasing power of EDF to enforce a reorganization of France's heavy electrical equipment industry. 1/

As a member state of the EC, France became subject to the GATT Agreement on Government Procurement on January 1, 1981. Also, French procurement policies are governed by article 30 of the Treaty of

1/ In spite of this potential control over nationalized firms, some precedent exists, suggesting that some nationalized firms can be left free to run themselves like their counterparts in the private sector. Renault, for example, appears not to have to abide by Government intervention in its purchasing practices.

Rome. Article 30 restricts the use of quantitative limits on imports from other EC member states. Currently, the EC is pursuing an alleged infraction under article 30. According to the allegation, the French Government has encouraged public authorities by ministerial letters and circulars to purchase goods made in France. There appears to be some evidence that this practice is effective. For example, a French hospital board recently decided to purchase medical equipment from a French firm, Thomson-Brandt, instead of from the German firm, Siemens, the company which was first awarded the contract. Also, the French Transport Network is alleged to have reversed a decision to buy a U.S. product and instead will purchase generators made by the nationalized aeroengineering company, Hispano-Suiza, even though they are considered to be more costly and of lower quality.

Disruptive customs practices

The French Government has been accused of using disruptive customs practices to discourage imports of certain products. The most widely publicized of these was a temporary 1982 order that all importers of Japanese video recorders had to clear their consignments through a small customs office 210 miles outside of Paris. The French Government also required that all documents accompanying customs forms be in the French language and that the country of origin be printed on all items. The language requirement was dropped in 1983 for imports from EC countries. The language requirement, however, still applies to imports from non-EC countries.

Foreign investment

As a general rule, the French Government has encouraged investments from overseas that entail advanced technology, that add jobs in surplus labor areas, or that expand exports. The result of the usually open French attitude to foreign investment is illustrated in table 9. The data in this table indicate that a substantial amount of industrial employment, sales, and investment in France comes from companies based overseas. According to one source, about one-third of foreign investment in France originates from U.S.-based companies, about 15 percent is from West Germany, and about 10 percent comes each from Switzerland, the United Kingdom, and Belgium. 1/

Foreign investment is heavily concentrated in the high-technology and mineral extraction sectors. By one estimate, in the data-processing, chemicals, petroleum-refining, and agricultural machinery industries, 40 percent of all investment is of foreign origin. 2/ The involvement of foreign investment is greater than 20 percent in iron mines, electronics, precision mechanics, scientific instruments, nonferrous metal work, rubber, and machine tools. On the other hand, the rate of foreign investment is very low in textiles, leather, furniture, and steel.

1/ Andre de Lattre and Michel Pebereau, Politique Economique de la France, Primiere Partie, Institute D'etudes Politique de Paris, 1983, p. 117.

2/ Ibid.

Table 9.--Foreign investment in France, 1980

(In percent)

Item	Foreign majority-owned firms	Foreign minority-owned firms 1/	French owned firms
Employment	14.2	3.3	82.5
Sales after taxes	21.4	3.6	75.0
Total investments	13.9	3.1	83.0

1/ Minority-held firms are those in which the non-French interest is between 20 and 50 percent.

Source: Andre de Lattre and Michel Pebereau, Politique Economique de la France, Primiere Partie, Institute d'etudes Politique de Paris, 1983, p. 117.

In spite of this usually open policy, control over foreign investment has been and could be used as a targeting tool. Because all foreign investments require the approval of French authorities, the French Government has a great deal of potential discretion in controlling investment flows to particular industries. Further enhancing the role of the Government in controlling foreign investment are the many investment incentives, including capital grants and tax breaks for foreign as well as domestic investment. Hence, at times when the Government may seek to protect certain industries from foreign participation and to prevent heavy concentration of foreign capital in key industries, the tools to do so are readily available. For example, during the 1978-81, the French Government wanted to establish a French-owned semiconductor industry. To this end, the Government required that foreign investors in semiconductors form joint ventures with French companies where the foreign firm owned less than 50 percent. 1/

The new French Government apparently continues to take a pragmatic and flexible approach to foreign investment. Because of the post-1981 Government emphasis on reconquering the domestic market in certain areas where nationalized industries have been established, new foreign investments in these areas might be considered unlikely to be approved or to receive investment incentives. Nonetheless, when domestic technology is lacking, the new Government has encouraged joint ventures between nationalized firms and foreign investors. For example, in 1982, one of the newly nationalized industrial groups, Pechiney Ugine Kuhlmann (PUK) signed a joint-venture agreement with Hercules, a U.S. chemical company, to produce carbon fiber. This product involves a rapidly changing and advanced technology crucial to the aeronautical industry of the future.

Tax Policy

Although Government ownership, financial subsidies, and cash grants are the most important methods of targeting in France, tax policy sometimes adds to the other efforts. However, tax policy is usually designed to foster all

1/ See, for example, M. Gold, "Firms Fear Joint Venture Rule May Bar French Telecommunications Role," Electronic News, Apr. 7, 1980, p. 1.

types of investments and tends less to favor specific targeted industries. The main aspects of the French taxation system that are currently in place and could potentially be used to target are accelerated depreciation allowances for certain expenses, a special tax regime for mergers, a special tax exemption for new companies, specially granted consolidation privileges, tax reductions for investments in regions with redundant labor, and tax expenditures. These aspects are described below, along with one recent example of tax policy being used to promote change in the textile industry.

Accelerated depreciation.--Accelerated depreciation is aimed primarily at increasing the general level of investment. For a number of years, before the new Government assumed power in 1981, France's system of accelerated depreciation was used primarily to promote construction. After a building was completed, a business could depreciate 25 percent of its cost in the first year. The remaining value of the building was depreciated over the normal useful life of the asset.

When the new Government came into power in 1981, an investment tax deduction was introduced as an incentive to raise both investment and employment. The new law permitted a business to deduct 15 percent of its total 1982 investment in capital goods in 1982, 10 percent in 1983, and 5 percent in 1984. To be eligible for the deduction, firms with fewer than 100 employees must agree to maintain their employment level, and firms with 100 employees or more must agree to increase their employment.

In 1983, a new accelerated depreciation law was introduced. Unlike the old accelerated depreciation law, the new one does not primarily cover construction, but allows accelerated depreciation of the following assets:

- assets used for industrial operations involving the manufacture of goods, their processing, and the transportation of such goods;
- assets used for the handling of goods;
- installations for the purification of water or air;
- installations to produce steam, heat, or energy;
- safety devices;
- installations to provide medical care;
- office furniture, with the exception of typewriters;
- assets used for scientific or technical research;
- installations used for the storing of goods with the exclusion of the building concerned; and
- hotel buildings and assets used for such buildings.

Tax exemption on special expenses.--As a general rule, expenses incurred in the conduct of a business are deductible. However, a 1982 tax law established a 30-percent tax on "lavish expenditures" for presents, entertainment, cars placed at the disposal of employees, real property not used for business purposes, and expenses for travel and conferences. However, if the "lavish expenditure" is for travel or for a conference related to export promotion, the expenditures are not taxed. Furthermore, a company can reduce the taxes on its "lavish expenditures" that are not related to exporting by raising its exports. A company can also reduce this tax by increasing its R&D expenditures.

Special tax regime for mergers.--In an effort to avoid unemployment caused by business failures and also to promote larger enterprises, the French Government uses tax policy to promote mergers. If a merger were to take place under ordinary French tax principles, the absorbing company would become liable for a large immediate tax liability--the capital gain from revaluing the absorbed company's assets. To reduce this burden and encourage mergers, a special tax system applies for company reorganizations.

Because the French Government actively encourages strong enterprises to take over weak ones in the hopes of saving jobs, this tax provision is an important part of French industrial policy. Matchmaking that leads to mergers is carried out by the Interministerial Committee on Industrial Restructuring (CIRI). CIRI, or its predecessor, has been in existence since 1973, and is currently helping about 140 industrial companies to restructure.

Special tax exemptions for regional development.--New investments that conform to French regional development policy can qualify for special tax benefits. 1/ In addition to reductions or exemptions from certain local business taxes and transfer taxes, businesses may depreciate plant and equipment purchased by regional aid grants on the basis of the asset's purchase price plus one-half of the aid they received to purchase the asset. This provision allows qualifying investors to deduct more than their initial investment in an enterprise.

Tax exemption for new businesses.--Under a 1982 law, new businesses are 100 percent exempt from corporate and local taxes for the first three years. During the fourth and fifth years, the exemption drops to 50 percent. To stimulate new investment and to prevent existing companies from merely establishing dummy corporations, the law requires that no more than 50 percent of the value of a firm be held by another company.

Special consolidation privileges.--French tax law usually requires that each corporation, even if owned by another corporation, be taxed separately. However, in certain cases companies can request the Ministry of Finance to permit them, for 5 years, to consolidate their subsidiary corporations on their income statements for tax purposes. This allows the parent corporation to consolidate profits and losses and thereby reduce the tax burden on the corporation. However, the burden can be only partially reduced, because French law requires that the consolidated income tax be no less than two-thirds the amount paid if consolidation were not allowed. Furthermore, only French subsidiaries can be consolidated, and the parent must own at least 95 percent of the subsidiary. These restrictions perhaps explain why only 25 companies have sought permission to consolidate.

1/ For purposes of deciding whether an investment qualifies for regional tax incentives, the country is divided into four geographic zones: A, B, C, and D. Most of the incentives are for investments in zones A and B. Zone A is primarily the western half of the country, certain border areas in the northeast, and certain areas in the northeast and center that have declining coal and iron mining and textile industries. Zone B covers other less-developed and depressed areas where economic problems are less critical than in zone A, and zone C consists of economically healthy areas more than 150 kilometers from Paris. Zone D comprises the Paris and Lyon areas, where no incentives are available.

<u>Social security tax reduction for textiles</u>.--In the textile industry, the French Government, beginning in February 1982, reduced social security taxes by 30 percent for firms promising to increase employment and to provide job security. This incentive was part of a system of sectoral programs mentioned above for the processing industries. (In these sectors, the Government attempts to improve the quality and functioning of the sector by promoting an association of domestic producers to share technology and reduce competition so that income and R&D expenditures may be raised.)

The EC ruled that the social security tax reductions were operating aid not connected with restructuring initiatives and were distorting competition and trade between member states. Consequently, the tax reductions were contrary to the rules of competition agreed among the member states. The EC took the case to the European Court of Justice, where the court ruled in the EC's favor. The French Government ended the tax reduction in 1983.

<u>Tax expenditures</u>.--The French Government has an elaborate system of tax expenditures that give special or selective tax relief to certain groups of tax payers. By law, the Ministry of Finance must publish a list of tax expenditures with each budget. Table 10 shows the tax source of most tax expenditures, the policy objective and the type of beneficiary. While one of the largest beneficiaries is commercial enterprises, very few of the specific tax expenditures could be considered industrial targeting because most tax expenditures are for general industrial provisions and not for specific industries.

Table 10.--Tax expenditures, by tax sources, policy objectives, and types of beneficiaries, 1980 and 1982

(In percent)

Item	1980	1982
Tax source:		
Income tax	61	62
Corporate tax	15	1/ 16
Value-added tax	12	14
Stamp duty	3	4
Other indirect taxes	6	2/ 1
Payroll tax	1	3/
Wealth tax	2/	4/
Oil consumption tax	5/	2/ 3
Total	100	100
Policy objective:		
Productive investment	25	15
Regional and sectoral aid	24	1/ 20
Social transfers	20	32
Housing	11	10
Saving	10	17
Simplification of administration	5	5/

See footnotes at end of table.

Table 10.--Tax expenditures by tax sources, policy objectives, and types of beneficiaries for 1980 and 1982--Continued

(In percent)

	1980	1982
Policy objective--Continued		
Export trade	3	5
All other	5/	1
Total	100	100
Type of beneficiary: 6/		
Industrial enterprises	25	27
Families	25	33
Investors	12	5/
Inheritors of property	10	10
Agricultural enterprises	8	2
Socially disadvantaged	6	5/
Property owners	4	4
Certain categories of workers	3	3
Various social categories	5/	13
All other	6	8
Total	100	100

1/ This includes 10 percent also attributable to the income tax.
2/ This includes some incidence of the value-added tax.
3/ Less than 0.5 percent. This does not include income tax provisions regarding wages.
4/ None of the wealth tax provisions were estimated.
5/ Not a category shown in this year's listing.
6/ For 1982, not all of the estimated tax expenditure provisions were assigned to a beneficiary category.

Sources: Reproduction of sections of Budget Papers for 1981 in France, Ministry of Economy and Finance, "Tax Expenditures" Statistiques et Etudes Financieres, No. 381, (Paris, July 1981), p. 52-53; and France, Bureau of the Budget, Ways and Means Estimates in Budget Papers for 1983, "Part Three: Tax Expenditures" (Paris, 1982), pp. 106-215.

Note.--Percentages of the total of estimated tax expenditures only. Just under one-half of the provisions identified as tax expenditures were estimated. Because of rounding, figures may not add to the totals shown.

Financial Markets

The French financial system consists of a very strong and largely Government-dominated banking sector, a much smaller bond market, and a very small equity market. Table 11 shows that in 1981, 70 percent of new financing for investment came from lending financial institutions, but only 5.5 percent came from the bond market, and 2 percent, from equity issues. One reason usually given for this distribution is the French public's traditional distrust of bonds and stocks. Another reason for the small bond and stock market is the crowding out of private investment caused by the large amounts of capital required by the Government for nationalized industry. The latter has always represented a large proportion of capital investment, and this proportion grew from 43.5 percent of investments made in 1980 to 51.9 percent in 1982 following the recent nationalizations.

Table 11.--Structure of new sources of financing for the economy, averages 1974-78 and 1979-81, and 1979-81

(In percent)

Item	Average: 1974-78	Average: 1979-81	1979	1980	1981
Resources (financial liabilities of nonfinancial agents)----------	100.0	100.0	100.0	100.0	100.0
General Government bond issues-----	.3	6.4	4.4	9.6	5.3
Issues of securities by non-financial enterprises:					
Shares--------------------------	2/	3.4	3.2	5.2	1.8
Bonds---------------------------	2/	4.3	3.7	3.6	5.5
Total--------------------------	9.4	7.6	7.0	8.8	7.3
Lending by bank financial institutions---------------------	46.7	52.9	55.3	61.6	41.8
Lending by nonbank financial institutions---------------------	29.0	25.4	25.1	22.6	28.5
Other liabilities (including credit to Government)------------	14.2	12.0	8.3	-2.6	17.1

1/ Households, nonfinancial enterprises, public and private administrations, and insurance companies.

2/ Not available.

Source: Conseil National du Credit, Rapports Annuels.

Note.--Because of rounding, figures may not add to the totals shown.

Lending financial institutions

The Government influences the lending sector in several ways. First the national Government owns the major banking institutions and also can exercise direct control over a number of state financial institutions. Second, nationalized industries are the main consumers of investment funds. Third, the Government can control interest rates and credit flows in a selective way by lowering reserve requirements for specific-purpose loans. Fourth, the Government has direct control over access to the bond market and so can partially and indirectly control the amount of borrowing in other markets.

The registered banks

The largest source of investment capital comes from the registered, or deposit, banks. 1/ The registered banks are dominated by three large banks

1/ From 1945 until 1966, the registered banks were divided into either deposit banks or merchant banks. However, a banking reform law in 1966 eliminated that distinction.

which were nationalized in the late 1940's: Banque National de Paris, Credit Lyonnais, and Societe General. Together these three banks now account for about one-half of all deposits in registered banks. Since 1981, the Government has owned virtually all registered banks.

Before the 1981 nationalizations, the Government indirectly controlled lending of the registered banks through the Encadrement de Credit, through the interest rate, and through the top managers of key banks. Even before the nationalizations, many of the top managers were appointed from the ranks of the key ministries of the Government, and hence were attentive to the official industrial policy. Since the nationalizations, this guidance from the Government has become more explicit, and the nationalized banks have been called on especially to help finance the needs of the nationalized industries. 1/

The Encadrement de Credit

The primary means of credit control is the Encadrement de Credit (EDC). The EDC is the target rate of increase in net assets for each registered bank. When a financial institution exceeds the EDC, the Treasury imposes large financial penalties. When a financial institution falls short of the EDC, future limits are reduced.

By raising the EDC for those banks making loans to favored industries, the EDC can be used to direct loans to industries favored by the Government. For example, the range of increase of the EDC for individual banks in 1980 varied between 2.5 and 7.5 percent of the previous year's EDC. Although the official reason for varying the growth rate of the EDC was to encourage small banks, some allege that the real purpose is to favor banks with close ties to favored industries. 1/

Another method of using the EDC is to exempt certain types of loans from being included in a bank's EDC. Before 1980, loans for energy, for exports, and for low income housing were exempted. After 1980, energy and housing loans were only partially exempted, but export loans remained fully exempted.

Savings banks

Savings banks include cooperative banks which were originally established to serve the rural population, popular banks which originally specialized in serving small businesses and artisans, and the postal checking system. Many

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1/ In 1982, the banks were called on to provide 6 billion francs to the newly nationalized firms. One-half of this amount consisted of loans provided at an interest rate of 5.5 percent for the first 5 years, 9 percent for the second 5 years, and 14 percent for the third 5 years. In addition, the banks making the loans participate in the company's profits. The other half will be channeled through a "Public Investment Corporation." In exchange for investing 3 billion francs in the corporation, the banks will receive preferred shares in the corporation.

1/ U.S. Congress, Joint Economic Committee, "Monetary Policy, Selective Credit Policy and Industrial Policy in France, Britain, West Germany and Sweden," June 26, 1981, pp. 18-20.

of the funds deposited in these institutions are channeled by various Government-controlled intermediaries back to selected borrowers according to Government policy. The cooperative banks, for example, channel their funds to the National Agricultural bank, and deposits of the postal checking system are frequently allocated by the government to some of the intermediaries described below.

National Agriculture Bank (CNCA)

The CNCA receives most of its funds from the cooperative banks in rural France. Traditionally the purpose of CNCA has been to attract the resources of rural France for the development of rural France; hence, many of the loans of the CNCA are restricted to rural or small-town France and to agricultural industries.

Table 12.--Distribution of Credit National loans, 1982

Industrial sector	Amount	Percent of total
	million francs	
Food-agriculture	561	4
Metal industries	1,131	9
Automobile and aviation	2,423	19
Tourism	1,710	13
Electronics	717	6
Energy	952	7
Chemicals and glass	821	6
Textiles	230	2
Paper	593	5
Construction	1,590	12
Other	2,206	17
Total	12,934	100

Source: 1982 Annual Report of Credit National.

Caisse de Depots et de Consignations (CDC)

The CDC receives most of the savings bank deposits not going to the CNCA and has primary responsibility for distributing them. The CDC lends to public infrastructure projects, such as housing and roads, to local governments, to the Treasury, and to other financial intermediaries. It also invests in the stock and bond markets. CDC holdings are estimated to be 5 percent of the stocks on the Paris stock exchange and about 20 to 30 percent of the new bond and new stock offerings.

Credit National (CN)

The CN is a private company traded on the stock exchange. Its main purpose is to encourage the growth of industry in collaboration with Government policy. Most of CN's resources come from the domestic and international markets, although frequently a portion of CN's loans receive a subsidy from the Government. By law, the board of directors is elected by the French parliament.

Most of CN's loans are for long-term capital investment projects. CN may also provide loans to help restructure an industry and frequently receives funds for this purpose from the Economic and Social Development Fund (FDES). For example, CN helped restructure the troubled chemical and steel industries in the late 1970's and in 1982 received 366 million francs from FDES to facilitate industrial restructuring. Table 12 shows how CN loans were distributed among the major industrial sectors in 1982.

Fund for Industrial Modernization (FIM)

Beginning in 1983, the French Government instituted a special type of tax-free savings account for French citizens. The purpose of the account--called Industrial Development Savings Accounts (CODEVI)--is to increase the amount of savings going to industrial modernization. Under the rules of the account, registered banks must lend a proportion of the proceeds of the CODEVI accounts to the FIM for Industrial Modernization for investing in industrial innovation or in energy savings. A Government agency, Agence Nationale pour Valorisation de Recherche under the Ministry of Industry and Research, determines whether a particular loan request qualifies for CODEVI funds.

The CODEVI account has become very popular with the French people (attracting about 40 billion francs in 1983). Industry received a little less than 2 billion francs from the FIM in 1983 and is expected to receive up to 8-9 billion francs from the FIM in 1984. Of this 1984 amount, 1.25 billion francs has already been allocated to modernizing the automobile industry.

Because of the surprising popularity of the CODEVI account and the larger than anticipated amounts collected so far, the Government has not yet decided what to do with the funds not going into the FIM. Some of this money may be used to increase the funds available to the financial intermediaries such as Credit National, mentioned above, or the Credit d'equipement des PME, mentioned below.

Credit d'equipement des PME (CEPME)

CEPME is a Government-backed lending institution set up to assist small- and medium-sized firms with planning and financing industrial equipment purchases. CEPME borrows its funds from the national and international credit markets.

CEPME provides two types of loan facilities. Long-term loans, guaranteed by the Government, are designed to promote job creation, factory reconversion, innovation, energy efficiency, and exports. The other facility is a loan guarantee to help small companies raise money at low interest rates through the banks. In 1982, 18.7 billion francs were either loaned or guaranteed through the CEPME.

Economic and Social Development Fund (FDES)

The FDES receives its funds from the checking accounts and national savings bank operated by the post office. In the past this was a major conduit of Government financing to nationalized industry (primarily companies in transportation and energy) and housing. However, beginning in 1982, the

Government began to phase out the activities of the FDES and to transfer them to other agencies. The FDES annual lending declined from 9.2 billion francs in 1982 to 1 billion francs in 1983.

Banque Francaise du Commerce Exterieur (BFCE)

The BFCE, established in 1946, underwrites loans to prefinance manufacturing goods for export. These include working capital credits and large-order credits and are usually for the short or medium term. The BFCE also provides for long-term "mixed loans" which are a combination of normal commercial terms with "soft terms" such as special long-term loans with extremely low interest rates. Table 13 shows the principal product categories that benefit from export credits in France.

Compagnie Francaise d'Assurance au Commerce Exterieur (COFACE)

COFACE is an export and investment insurance company that guarantees national exporters and investors against losses on their operations in foreign markets. These include insurance for risks of manufacturing problems, political changes, credit failure, and catastrophe.

Table 13.--Principal product categories benefiting from export credits in France, 1976

(In millions of francs)

Item	Medium- and long-term credits 1/	Short-term credits 2/
Machinery	4,175	1,119
Automobiles and vehicles	3,143	1,416
Miscellaneous metal manufactures	2,978	520
Electrical/electronic machinery	2,262	1,074
Aircraft	2,122	480
Ships	1,900	30
Public works	1,418	-
Parachemical	908	656
Machine tools	383	234
Rubber	280	528
Metalworks	271	273
Precision mechanical products	240	394
Agricultural machinery	67	311
Mineral/organic chemicals	-	2,647
Pharmaceutical products	-	433
Clothing	-	390
Leather	-	380
Plastics	-	190
Hats	-	172
Glassware	-	138

1/ 5 years and more.
2/ Up to 5 years.

Source: Rapport du Conseil National du Credit, presented in Problemes Economiques, Aug. 24, 1977, p. 12.

Science and Technology Policies

The French Government has long pursued policies aimed at advancing science and technology. The first postwar efforts in this area focused on creating major programs in the nuclear, defense, and space sectors. Subsequent programs in the 1960's concentrated on sectoral plans and on choosing national champions, firms that could lead French industry to the forefront of modern technology and international competition. For example, the French Government decided to fund R&D for the civilian prototypes of Concorde (a joint venture with the United Kingdom), of Airbus (a joint venture with West Germany), and of Mercure (a small, short-range airplane). The cumulative R&D subsidies to these three projects amounted to 6 billion francs between 1962 and 1972.

In the 1970's, the emphasis changed to one of fostering R&D efforts on a wider front by channeling funds to selected high-technology areas through financial intermediaries. Six "industries of the future" were chosen for special attention: (1) bioengineering, (2) marine industries, (3) robots, (4)electronic office equipment, (5) consumer electronics, and (6) alternative energy technologies.

The new Government has expanded upon this tradition and taken a number of steps to promote scientific research and innovation. These changes are considered of great importance for improving competitiveness of French firms in domestic and international markets. One change was to merge the Ministries of Research and Industry into a "super ministry" with a budget of $300 million in 1982 to expand R&D activities. Another step was to pass the Technological R&D Orientation Act in June 1982. The act sets the annual increase in budget appropriations for research at 17.8 percent until 1985. This increase in the Government budget, combined with an estimated increase in expenditures by firms of 8 percent a year, will enable the French economy to reach the official objective of 2.5 percent of the gross national product for research by 1985. Furthermore, the act provides for joint work Public Interest Groups (GIP's) where public and private industries can cooperate on innovation projects. To stimulate in-firm research and development, the 1983 Finance Act provides for a tax credit equal to 25 percent of the increase in a firm's R&D expenditure.

Table 14 shows how Government expenditures were distributed during 1980-82.

Cartel and Merger Policy

Policies against monopolies and restrictive practices have not been as extensive in France as in the United States. In general, such policies are subordinated to the major goals of French economic policy (i.e., employment, growth, and reconstruction). For example, the existence of a monopoly is not necessarily illegal unless the dominant position is abused. According to French law, abuse takes place when the monopoly has the effect of interfering with the normal functioning of the market. However, even if the monopoly abuses its power, it may escape Governmental restrictions if the monopoly can show that it acted to improve distribution or production, if the action tends to insure economic progress by planning or specializing, or if the abuse is the result of applying another law or regulation. Automobile companies in particular have taken advantage of the law to engage in joint-research activities and production of components.

Table 14.--Percentage distribution of French Government expenditure on research and development, by objectives, 1980-82

Objective	1980	1981	1982
Exploring and exploiting the earth and its atmosphere	3.0	2.8	2.9
Environment	4.1	3.7	3.5
Health	5.5	5.5	5.4
Energy	7.5	7.4	7.1
Agriculture	3.9	3.9	3.9
Industrial productivity and technology	9.3	8.8	12.5
Social problems	1.3	1.2	1.2
Space	6.2	4.2	4.2
Defense	36.5	37.2	35.1
General promotion of knowledge	22.2	24.6	23.5
All other	6.4	.7	.8
Total	100.0	100.0	100.0

Source: Official statistics of the EC Statistical Office.

Note.--Because of rounding, figures may not add to the totals shown.

The same general set of principles applies to price fixing and other actions taken to restrict trade. Thus, in 1969, high selling prices for cement were accepted because of the industry's special need for self-financing of investment.

Price and wage controls

One reason for the relative absence in France of strong antitrust laws and enforcement procedures is the long history of price and wage control. Under sometimes strict and sometimes lax programs, prices and wages were controlled in France from the end of the Second World War until 1978. Wage and price controls were again imposed in 1982 and are still in effect. Price controls provide the Government with a potential targeting tool if applied discriminately to foreign and domestic products. In 1973, for example, domestic drug companies were able to raise their prices more than companies importing drugs.

Distressed industry mergers

As part of its policy both to assist small firms to combine and also to avoid unemployment in distressed industries, the French Government helps firms to restructure. Through the Interministerial Committee for Industrial Restructuring, over 500 firms have been helped with modest cash outlays, frequently used to encourage a healthy firm to take over an ailing one. The most prominent example of this was the 1974 subsidized loan of 1 billion francs to Peugot to merge with Citroen. This merger reduced the number of domestic French car companies to two--Renault and Peugot. However, because almost one-half of French car production is exported, the value of maintaining domestic control and employment were considered more important than industrial competition.

The Vertical Integration (Filiere) Concept

One of the major initiatives of the new Government has been to promote Filieres, a vertical structuring of sectors to coordinate activities in industries upstream and downstream. The best known of these is the Filiere Electronique. This involves planning and coordination in many high-technology sectors: computers, consumer electronics, robotics, telecommunications, components, and software.

Germany, Federal Republic, of Industrial Policy and Targeting

Historical Overview

From the end of the Occupation Period until the mid-1960's, the Federal Republic of Germany (West Germany) generally had very few policies designed to alter the relative competitiveness of its industrial sectors. A number of the economy's weaker sectors were protected from imports. Furthermore, in the 1950's, special tax incentives encouraged investment in the steel, coal, iron ore, and electric power industries. 1/ Nonetheless, during this period, the West German Government did little that could be considered targeting.

The West German economy grew quite rapidly during the period of minimal targeting. Nonetheless, in the mid-1960's, the West Germans adopted a more aggressive industrial policy. Spurred by the apparent success of French industrial policy, the West Germans began concertation, a policy similar to the French interest group consultations. Concertation, which was authorized by the Stability and Growth Act of 1966, involved discussions among Government ministers, business executives, and union officials. These discussions apparently led to a consensus that to maintain high growth, Germany had to concentrate more resources on high-technology industries and phase out traditional sectors where competition from developing countries was increasing. 2/

Thus, the West German Government increased its support for research and development. By 1974, West Germany's publicly funded civilian research and development was 1.1 percent of gross domestic product, the highest rate in Western Europe. 3/ In particular, the Government actively promoted research and development in computers and aircraft, in large part because of its desire to close a technology gap with the United States. In 1972, these two sectors received 6.9 percent of the West German Government's total subsidies to industry, exclusive of subsidies to transportation and agriculture, and regional aid. 4/

While aggressively promoting new-technology, the West German Government has also supported a number of depressed sectors. Both shipbuilding and coal mining received heavy subsidies. In 1972, subsidies to coal mining were 18.9 percent of total subsidies to industry, 2.75 times the combined subsidies to aircraft and data processing. 5/ Furthermore, although textiles and apparel

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1/ R. E. Nyrop ed., Federal Republic of Germany, (Washington, D.C., U.S. Army, 1982); p. 219.

2/ For a discussion of the switch from a noninterventionist policy to concertation, see Lawrence Franko, op. cit., pp. 18-21.

3/ Ibid., p. 20.

4/ Gerhard Fels, "Overall Assistance to German Industry," in W.M. Corden and G. Fels, eds. Public Assistance to Industry, Boulder Colo., Westview Press, 1976, p. 100.

5/ Total subsidies to industry exclude subsidies to transportation and regional aid. Ibid., pp. 100 and 104.

received little in direct subsidies, they received substantial protection from imports. Still, West Germany devoted fewer resources to supporting declining sectors than other EC member states. 1/

The structure of West German aid to industry is shown in table 15. The West German Government has targeted most of its subsidies not to specific industries but to specific regions, particularly West Berlin. In 1974, 53.1 percent of West German assistance to industry was in the form of regional assistance. This aid apparently is not heavily concentrated on any one industry. The regional aid program, however, has been criticized for favoring low-technology industries that use unskilled workers. The West German Government recently responded to these criticisms by increasing the value-added tax (VAT) rebate given to firms that produce goods in West Berlin. The Government believes that greater VAT rebates will encourage high-value-added, high-technology firms. 2/

Nonregional aid, which consists of research and development aid and industry-specific programs, heavily favors the aircraft industry. Nonregional aid is 23.4 percent of domestic value added in the aircraft industry; no other sector receives more than 3.8 percent.

The tariff rates, shown in table 15, are effective rates and they have been adjusted to take account of the effect tariffs on an industry's inputs have on its costs. These data show that the sectors that enjoy the most tariff protection are pulp and paper, nonferrous metals, textiles, clothing, and paper products. These data do not show the effects of nontariff barriers on trade. Therefore, they may seriously understate the protection given textiles and clothing, which benefited from quotas, and aircraft, which benefited from Government procurement preferences.

From the mid-1970's until 1980, West German industrial policy changed very little. Regional programs, coal mining, shipbuilding, and aircraft continued to receive a heavy share of Government subsidies. Total subsidies to industry steadily increased, even after adjusting for the effects of inflation. West Germany, however, may be adopting a less active industrial policy. Subsidies to industry fell in 1981 and 1982. The Government plans to reduce its subsidies and has been studying which ones to abolish. 3/ Furthermore, the Government is considering selling large parts of its nationalized industries. 4/

1/ In 1976, West Germany's direct public subsidies to enterprises were 1.5 percent of GDP, compared with 4.1 percent for Belgium, 2.9 percent for the Netherlands, 2.8 percent for the United Kingdom, and 2.7 percent for France. Lawrence Franko, op. cit., p. 4.

2/ Business Europe, Feb. 11, 1983, p. 43.

3/ Ibid., Sept. 10, 1982, pp. 294 and 295.

4/ Ibid., Oct. 7, 1983, pp. 313 and 314, and Europe, November-December 1982, pp. 4 and 5.

Table 15.--Assistance to West German manufacturing as a share of value added, by types of programs, 1974

(In percent)

Industry	Domestic subsidies			Effective tariff protection	Total
	Regional programs	All other	Total		
Stone and clay products	0.8	0.3	1.1	3.7	4.8
Basic iron and steel	.4	.2	.6	17.0	17.6
Foundries	.6	.1	.7	12.1	12.8
Rolling mills	.5	.1	.6	7.7	8.3
Nonferrous metals	2.1	.3	2.4	22.3	24.7
Chemicals	.5	.8	1.3	14.4	15.7
Saw mills	1.1	1.1	2.2	13.7	15.9
Pulp, paper, paperboard	.7	.2	.9	29.6	30.5
Rubber and asbestos	.5	.1	.6	8.7	9.3
Structural engineering	1.0	.4	1.4	1.4	2.8
Machinery	.5	.8	1.3	2.5	3.8
Road motor vehicles	.6	.2	.8	5.8	6.6
Aircraft	.1	23.4	23.5	-.9	22.6
Electrical equipment	1.9	.8	2.7	4.5	7.2
Precision mechanics, optics, watches	.9	.8	1.7	4.9	6.6
Fabricated metal products	1.1	.2	1.3	5.6	6.9
Precision ceramics, pottery	.9	.2	1.1	9.9	11.0
Glass	.6	.3	.9	11.1	12.0
Woodworking	.8	.0	.8	9.9	10.7
Musical instruments, toys, etc	.7	.0	.7	6.9	7.6
Paper products	.6	.2	.8	19.9	20.7
Printing and publishing	.6	3.8	4.4	5.3	9.7
Plastic products	1.1	.2	1.3	9.8	11.1
Leather, leather goods, shoes	.2	.3	.5	9.4	9.9
Textiles	.7	.6	1.3	20.8	22.1
Clothing	1.2	.6	1.8	20.7	22.5

Source: H. H. Glismann and F. D. Weiss, "On the Political Economy of Protection in West Germany," World Bank Staff Working Paper No. 427, October 1980, p. 13.

Home-Market Protection

West Germany has protected its industries from import competition through both tariff and nontariff barriers such as quotas, voluntary restraint agreements, and Government procurement preferences. The importance of home-market protection to West German industries began to decline in the 1960's as West Germany participated in a number of international negotiations designed to reduce barriers to international trade. 1/ Furthermore, since the early 1970's, West Germany has set its policies on imports jointly with the other countries of the EC rather than independently. Therefore, home-market protection will be discussed only briefly.

In West Germany, tariffs and quotas primarily protect labor-intensive and raw-material-intensive industries. These are weak sectors where German industries are at a disadvantage in international trade. Highly protected sectors include agriculture and forest products, textiles and apparel, and coal. (The thin seams and great depths of German mines make their production costs higher than the world market price for coal.) Tariffs and quotas generally have not been used to protect high-technology industries.

High-technology industries, however, have benefited from Government procurement preferences. Firms in regions whose development the Government particularly wishes to foster also have benefited from these preferences. Government procurement preferences can be particularly important in West Germany because of the large extent of state ownership of industry. In particular, in West Germany, the Government owns all or a controlling share of the telecommunications system, most of the electrical utilities, and the major airline. West Germany does not have a specific law requiring state-owned enterprises to buy domestic goods, but in the past, these enterprises generally did not buy imports if there was an acceptable domestic alternative. 2/

Procurement preferences, however, have decreased in importance in West Germany for two reasons. On January 1, 1981, West Germany acceded to the GATT Agreement on Government Procurement. 3/ This agreement has reduced the use of procurement preferences, but it does not cover all types of procurement. The West German Government also has decreased its use of procurement preferences, because they can be a costly and ineffective way of supporting industries. For example, the Government does not influence the equipment-purchasing decisions of Lufthansa, the state-controlled airline, although its procurement is not covered by the GATT agreement. The Government feels that to force Lufthansa to buy German aircraft might harm the airline's financial performance. Furthermore, although a free decision by a major airline such as Lufthansa to buy an aircraft is an endorsement that may help persuade other carriers to buy the aircraft, a forced decision provides no endorsement. The West German Government has not asked Lufthansa to order the Airbus A-320, and Lufthansa has not ordered it. West Germany's state-owned telecommunications network also has become more open to foreign suppliers.

1/ Gerhard Fels, op. cit., p. 92.

2/ J.B. Donges, "Industrial Policies in West Germany's Not So Market-Oriented Economy," <u>World Economy</u>, 3(2), September 1980, p. 192.

3/ The section of the report entitled "The European Community and Industrial Policy" discusses this agreement in more detail.

Tax Policy

West German tax benefits to industry usually support the development of specific regions, not specific sectors. Some tax benefits, however, are aimed at helping the coal, shipbuilding, and steel industries.

West German tax benefits generally are of two kinds: tax credits and special depreciation allowances. For example, investors in east-border areas may take a credit of 10 percent of their investment if they meet certain criteria. Businesses in these areas also are allowed a special depreciation allowance equal to from 40 to 50 percent of any investments made in the area if taking this allowance does not cause or aggravate a tax loss. 1/

The West German Government publishes a biannual report on the subsidies inherent in its tax measures and in its financial assistance. Tax benefits included in this report generally are those that preserve enterprises or industries or help them adjust to changed circumstances, that encourage growth and high productivity, that stimulate savings, or that lower input prices to certain sectors. The Government measures the value of these benefits by the revenue lost due to them. Table 16 shows data from the "Ninth Subsidy Report" on the distribution of the benefits of special tax provisions. In 1982 these provisions resulted in 13,979 million deutschemarks' ($4,905 million) worth of subsidies, but only 5,212 million deutschemarks ($1,829 million), or 37 percent, went to industry. Tax benefits to industry are larger than financial assistance. Most tax benefits, however, are part of programs that assist specific regions. In 1982, regional subsidies amounted to 4,245 million deutschemarks ($1,489 million), or 81 percent of the total tax benefits to industry. Table 16 does not show the Länder Government's tax subsidies. 2/ The combined tax benefits to industry of the German Federal and Länder Governments in 1982 were 10,908 million deutschemarks ($3,827 million), of which 8,584 million deutschemarks ($3,012 million), or 79 percent, were regional subsidies.

Nonregional tax benefits to industry serve many different purposes. Many of these tax breaks, such as those that encourage small businesses or that allow tax relief to firms hurt by large price increases, apply equally to all firms.

Among the tax benefits that apply equally to all firms is one to encourage research and development. Firms may take a tax credit equal to 20 percent of their research and development expenditures up to 500,000 deutschemarks and 7.5 percent of R&D expenditures above that level. The Government allows a higher percentage credit for the first 500,000 deutschemarks' worth of expenditures to help small businesses. If a firm's tax liabilities are less than the credit, it may receive the unused part of the tax credit as a direct payment. This provision resulted in Federal and Länder tax subsidies of 289 million deutschemarks ($128 million) in 1981 and 283 million deutschemarks ($116 million) in 1982. 3/

1/ OECD, "International Investment and Multinational Enterprises," Paris, 1983, p. 128.

2/ Länder Governments are the West German equivalent of State Governments.

3/ The projected value of this subsidy is 300 million deutschemarks in both 1983 and 1984. Table 16 shows the amount of this subsidy that comes from Federal Government revenues, 140 million deutschemarks in 1982.

Table 16.--The West German Government's tax benefits, by sectors, 1981-84

(In millions of deutschemarks)

Sector	1981	1982	1983 1/	1984 1/
Agriculture, nutrition, and forestry	421	336	296	275
Industry	5,050	5,212	5,492	5,671
Mining	122	125	126	126
Energy and raw-material supply	53	90	99	99
Promoting innovation	143	140	148	148
Steel	2/	30	60	100
Regional programs	4,135	4,245	4,323	4,447
Other	597	582	736	751
Transportation	877	896	920	952
Housing 3/	2,241	2,463	2,965	3,438
All other	5,455	5,072	5,257	5,377
Total	14,044	13,979	14,930	15,713

1/ Projected.
2/ None reported.
3/ Includes public buildings.

Source: Federal Republic of Germany, Ministry of Finance, "Ninth Subsidy Report."

A number of tax benefits play a role in the Government's energy policy. These tax benefits encourage hydroelectric development, oil storage, and investment in energy production and distribution. There are also special tax benefits for the coal industry; these benefits are classified under mining. Otherwise, industry-specific tax benefits aid two industries: steel, and shipbuilding. Tax benefits for the coal and steel industries are discussed in the section of the report on targeting techniques for those industries. The shipbuilding industry benefits from certain tax provisions that encourage the purchase of new ships. These benefits are classified under transportation in the "Ninth Subsidy Report."

Financial Assistance

The distribution of West German financial assistance is shown in table 17. In 1982, the Government gave 3,672 million deutschemarks, or $1,511 million, in financial assistance to industry. Mining received 35.9 percent of that assistance, almost all of which went to coal mining, aircraft received 11.0 percent, steel received 10.0 percent, and shipbuilding received 6.5 percent. Shipbuilding, however, also benefited from 198 million deutschemarks, or $81 million, in subsidies given to encourage modernizing the ocean shipping fleet.

The Government usually gives financial assistance in the form of grants, loan guarantees, or low-interest-rate loans. Loans are usually channeled through the Bundesbank into one of the major banks, particularly the Deutsche Bank, Dresdner Bank, and the Commerz Bank. The banks are responsible for

Table 17.--The West German Government's financial assistance by sectors, 1981-84 1/

(In millions of deutschemarks)

Sector	1981	1982	1983	1984
Agriculture, nutrition and forestry	2,330	2,322	2,286	2,511
Industry:				
Mining	2,030	1,320	1,230	1,141
Energy and raw-material supply	347	369	444	469
Promoting innovation	440	542	585	594
Shipbuilding	302	240	290	250
Aircraft	436	403	330	380
Steel	82	369	617	600
Regional programs	262	213	250	260
Other	165	216	340	309
Subtotal	4,066	3,672	4,086	4,003
Ocean shipping	334	198	240	265
Other transportation	981	882	798	695
Housing 3/	3,504	3,471	3,583	3,996
All other	2,392	2,663	2,660	1,880
Total	13,607	13,208	13,653	13,350

1/ Data for 1983 and 1984 are projections.
2/ None reported.
3/ Includes public buildings.

Source: Federal Republic of Germany, Ministry of Finance, "Ninth Subsidy Report."

choosing the specific firms that receive loans and for determining the likelihood that a firm can repay the loan. 1/

Trends in assistance

Table 18 shows how the composition of Government tax benefits and financial assistance, as shown in the "Subsidy Report," has changed since 1966. The share of agriculture in total aid has steadily declined, and the share of industry has generally risen, although it fell between 1980 and 1982. Most of the increase in industry's share of aid since 1966 is due to an increase in regional aid. The increase in the share of regional aid, however, ended in 1973. In 1982, the last year for which actual figures are available, industry received 32.6 percent of all aid, including the 16.4 percent of aid that went to regional programs. Mining's share of total aid increased from 4.2 percent in 1966 to 9.5 percent in 1980, but then fell to 5.3 percent in 1982. The share of aid given for promoting innovation rose steadily to 2.5 percent in 1982, and projected figures show a further increase. The share of aid of three selected industries, aircraft, shipbuilding, and steel, also rose steadily to 3.8 percent in 1982.

1/ Jack N. Behrman, "A Comparison of Approaches Toward Industrial Development," mimeo, appendix pp. 17-19.

Table 18.--Share of each sector in total West German Government assistance, 1966-82

(In percent)

Sector	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Agriculture, nutrition and forestry	37.6	31.3	30.7	23.9	31.8	28.6	22.9	23.0	19.7	19.2	18.4	15.8	15.5	15.0	13.4	9.9	9.8
Industry 1/	18.5	29.1	24.7	25.9	24.8	24.7	26.8	28.2	29.4	25.6	24.0	22.5	28.0	31.1	33.5	33.0	32.6
Mining	4.2	8.6	8.6	5.3	3.5	2.5	3.3	5.2	6.6	4.7	3.8	4.3	8.6	8.7	9.5	7.8	5.3
Energy and raw material supply	2.9	1.6	.4	.2	.1	.5	.2	.3	1.1	1.6	.9	.9	.7	1.0	1.0	1.4	1.7
Promoting innovation 2/	.5	.5	.5	.6	1.0	1.0	1.0	1.3	1.0	.7	.5	.7	.6	1.8	1.9	2.1	2.5
Selected industries 3/	.3	.3	.5	1.1	1.2	1.3	1.4	1.4	1.6	1.7	1.6	.7	1.4	2.0	2.5	3.0	3.8
Regional programs	5.3	13.7	11.7	15.1	13.7	14.6	16.1	16.2	15.6	13.6	14.4	12.7	13.5	14.4	15.5	15.9	16.4
Banking	1.8	1.8	.8	1.0	1.3	1.3	1.4	1.1	1.3	1.4	.7	.6	.7	.7	.8	.0	.0
Other	3.5	2.6	2.2	2.6	3.9	3.5	3.4	2.7	2.2	1.9	2.1	2.6	2.7	2.5	2.3	2.8	2.9
Transportation	5.9	5.1	6.0	8.1	6.1	5.5	6.2	6.5	6.2	6.4	7.0	7.7	9.1	8.8	9.0	7.9	7.3
Housing 4/	20.4	18.4	14.8	12.4	10.8	11.1	14.4	15.0	15.9	16.1	16.9	15.7	15.6	17.8	17.4	20.8	21.8
Other	17.6	16.1	23.8	29.7	26.6	30.1	29.7	27.3	28.8	32.7	33.7	38.3	31.8	27.3	26.7	28.4	28.5

1/ Aid to the merchant marine for buying new ships is under transportation.
2/ Excludes aid to aircraft and certain small programs that are listed under other.
3/ Shipbuilding, aircraft, and steel.
4/ Includes municipal buildings.

Source: Federal Republic of Germany, Ministry of Finance, "Eighth Subsidy Report," and "Ninth Subsidy Report."

Table 19 indicates trends in total subsidies to industry. These subsidies in real terms, that is after adjusting for inflation, rose steadily from 1966 to 1973, declined until 1976, and then rose until 1980. Between 1966 and 1980, the real value of these subsidies grew by 362 percent. Subsidies declined sharply, however, from 1980 to 1982. The real value of subsidies to industry was $3,656 million in 1982, the lowest level since 1976.

Table 19.--West German Government assistance to industry, 1966-82

Year	Million deutschemarks	Subsidies million dollars	Million 1982 dollars 1/
1966	1,619	405	1,213
1967	2,939	735	2,198
1968	3,114	779	2,273
1969	3,017	766	2,151
1970	3,702	1,011	2,743
1971	4,234	1,213	3,184
1972	4,762	1,498	3,762
1973	5,369	2,011	4,468
1974	6,119	2,363	4,418
1975	5,564	2,262	3,870
1976	5,607	2,225	3,640
1977	5,742	2,475	3,815
1978	7,109	3,537	5,056
1979	8,024	4,385	5,570
1980	9,163	5,035	5,608
1981	9,116	4,034	4,120
1982	8,884	3,656	3,656

1/ Data are adjusted for inflation using the Producer Price Index.

Source: Subsidy data, compiled from the Federal Republic of Germany, Ministry of Finance, "Eighth Subsidy Report" and "Ninth Subsidy Report;" other data are calculated by the staff of the U.S. International Trade Commission.

Data in the "Ninth Subsidy Report" do not include all types of financial aid to industry. The report does not reflect loan guarantees, because such guarantees rarely cause the Government to disburse funds. The report also does not reflect equity interests in nationalized industries, or export financing. The report reflects only subsidies to research and development if the results are near commercialization. The major types of aid excluded from the "Ninth Subsidy Report" are discussed below or in the "Science and Technology" section.

Nationalized industries

National ownership in an industry can confer financial benefits. The state sometimes provides equity funding at lower costs than private investors. Furthermore, if creditors perceive state-owned businesses as less risky than private firms, they should be willing to lend money to state-owned businesses at lower interest rates than those private firms pay. National ownership, however, also has some serious disadvantages. State-owned firms sometimes find that to satisfy various governmental goals they must alter business plans in ways that reduce profits and growth. Therefore, national ownership does not always work to increase an industry's competitiveness.

Government ownership of industry in West Germany has served five policy goals: increasing employment in depressed regions, avoiding private monopolies, providing low-income housing, accelerating innovation, and attaining self-sufficiency in strategic goods, such as aluminum. 1/ The extent of the West German Government's ownership of industry still is large compared with the U.S. Government's, even though the West German Government sold off a large share of its holdings in the 1950's. The West German Government currently owns 74.8 percent of Lufthansa, the country's major airline, 30 percent of the shipbuilding industry, 28 percent of the auto industry, and large shares of certain energy and chemical companies. State-owned firms produced 50 percent of West Germany's aluminum and slightly more than 9 percent of its steel. In addition, Länder Governments own parts of two aircraft companies. Bavaria and Hamburg together own 43.8 percent of Messerschmitt-Boelkow-Blohm; Bremen owns 26.4 percent of VFW-Fokker. 2/ The Government has found, however, that the efficiency and innovativeness of state-owned firms is inferior to that of private firms. The Government is considering reducing its ownership of industry.

Export credits

The West German Government has several programs to help finance exports. A program of export credit insurance and loan guarantees is administered through a consortium of two firms, Hermes and Treuarbeit. The Government-owned Kreditanstalt für Wiederaufbau (KfW) finances exports to developing countries. AKA-Ausfuhrkredit-Gmbh. (AKA), a private firm, receives Government support for some of its export financing. Official credit insurance is required for all KfW loans and for almost all Government-assisted AKA loans. 3/

Decisions on granting export credit insurance are made by Hermes, unless the contract is for more than 2 million deutschemarks, in which case approval must come from the Interministerial Committee for Export Guarantees. This Committee includes representatives from the Ministry's of Finance, Economic Affairs, Foreign Affairs, and Economic Cooperation. The Government usually insures from 85 to 95 percent of a loan; 100-percent coverage is never given. The charge for this insurance depends on the terms of the contract. Parliament sets a limit on the Government's total exposure under export credit insurance. At the end of the 1982 fiscal year, the limit was 160 billion deutschemarks, and the Government's exposure was 150.6 billion deutschemarks. 4/

1/ J.B. Donges, op. cit., p. 192.

2/ Jack N. Behrman, op. cit., p. 19; Business Europe, Oct. 7, 1983, pp. 313-4; K.D. Walters and R.J. Monsen, "State-Owned Business Abroad: New Competitive Threat," Harvard Business Review, 75 (2) March-April 1979, p. 163; Donges, op. cit., p. 192.

3/ Organization for Economic Cooperation and Development, The Export Credit Financing System, Paris 1982, pp. 101-116.

4/ U.S. State Department unclassified cable, Bonn 14186, June 11, 1983.

KfW borrows about 25 percent of the funds it uses for export credits from the Government at a 4.5-percent interest rate; it raises the rest of its export credit funds on the private market. KfW's Government-supplied funds supported about 800 million deutschemarks' worth of export credits in both 1979 and 1980. AKA's Government-assisted loans usually involve exports to developing countries. AKA's Government-assisted credits reached 886 million deutschemarks in 1980. KfW and AKA loans are denominated in deutschemarks, except for Airbus loans, which are usually denominated in U.S. dollars. In 1980, KfW and AKA Government-assisted loans financed less than 1 percent of West Germany's exports. 1/

Export credit financing is targeted only if certain industries receive readier access to funds or better terms than other industries. The West German shipbuilding and aircraft industries appear to receive better terms than those generally available. Various international agreements set the minimum terms of West German export credit financing. For most industries these terms are set by the Organization for Economic Cooperation and Development (OECD) "Arrangement on Guidelines for Officially Supported Export Credits." This arrangement exempts certain industries, however, including shipbuilding and aircraft. Export credits on ships are covered by the OECD "Understanding on Export Credit for Ships." Export credits on large transport aircraft are governed by the "Common Line Agreement" between the United States and the Airbus consortium, and export credits on other aircraft are governed by the OECD "Standstill Agreement." The "Common Line Agreement" allows financing terms that are about as favorable as those offered to most industries, but the "Understanding on Ships" and the "Standstill Agreement" allow terms that are much more favorable than those generally available. 2/ Loans to finance ship purchases were 54.2 percent of KFW's export credits in 1981 and 16.8 percent in 1982. Loans to finance aircraft purchases were 20.8 percent of KFW's export credits in 1981 and 15.9 percent in 1982. 3/

Kreditanstalt für Wiederaufbau

The KfW, the West German Government investment bank, started in 1948. The Federal Government contributed 80 percent of its starting capital, the Länder Governments contributed 20 percent. Most of KfW's business consists of loans, although it also provides loan guarantees and acts as a channel for Federal Government grants. KfW gives three major types of loans: M program loans, European Recovery Program (ERP) loans, and other official program loans. In 1982, M program loans were 65 percent of all loans, ERP loans were 33 percent, and other official program loans were 2 percent. M program loans use funds KfW raises on the international capital markets and carry interest rates close to the market interest rate. The primary advantage M loans offer borrowers is a fixed interest rate for a term of 10 years. 4/ ERP loans use

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1/ OECD, The Export Credit Financing System, p. 114.

2/ The agreements affecting export credits are discussed in Economic Impact of Foreign Export Credit Subsidies on Certain U.S. Industries: report on Investigation No. 332-144, . . ., USITC Publication 1340, January 1983, pp. 59-62, and 159-169.

3/ Similar data for AKA are not available. Kreditanstalt Für Wiederaufbau, Annual Report 1982, p. 15.

4/ M program loans are available for terms of up to 10 years, and most of these loans are for the full 10 years. There is a grace period of 2 years during which interest accrues.

Government funds, and carry interest rates below those of M program loans. The ERP loans may also have a longer term and grace period than M program loans. Because ERP loans usually are available at interest rates substantially below the market rate, they may involve substantial subsidies. ERP loans, however, except for certain loans for newspapers and shipbuilding, are not directed to specific industries. In 1982, 68.9 percent of ERP loans went to programs to aid small- and medium-sized businesses, and 25.4 percent went to aid West Berlin. 1/

Most of KfW's total domestic loans go to small- and medium-sized businesses or for environmental protection (table 20). The KfW domestic loans classified under other structural measures include loans for agriculture, oil-prospecting, municipal housing and recreation facilities, and seaports. The only industry-specific programs under this heading are aids for the shipbuilding industry. Deliveries from German shipyards to German shipowners were aided by 5.6 million deutschemarks' worth ($2.5 million) of ERP loans and 22.0 million deutschemarks' worth ($9.7 million) of official program loans in 1981, and by 3.9 million deutschemarks' worth ($1.6 million) of official program loans in 1982. 2/ In general, KfW's loans are equally available to firms in all industries, and these loans are widely distributed across industries (table 21).

Programs to provide capital to innovative firms

The West German Government believes that domestic capital markets do not provide enough funds for supporting commercial development of new products or processes. Therefore, the Government has begun several programs to give financial support for innovative activities. These programs are the capital participation societies and the First Innovation Program, administered by the Economics Ministry; the Risk Financing Association; and the Technologically Oriented Firm (TOU) program, administered by the Ministry of Research and Technology (BMFT). These programs exist primarily to support small innovative firms in high-technology areas that would have difficulty raising market financing; they are not directed at specific industries.

Capital participation societies (KBG's) receive 75 percent of their funding as ERP loans from the KfW. KBG's raise the rest of their funds from private sources. KBG's can then either make loans or take equity positions in small firms. KBG's apparently have been reluctant to provide capital for high-risk projects, and so they apparently have not given much support to

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1/ Data on the distribution of loans are from Federal Republic of Germany, Ministry of Finance, "Ninth Subsidy Report," pp. 305 and 306. In 1981, the KfW agreed to loan 47.5 million deutschemarks ($21.0 million) under a program that specifically financed purchases of data-processing hardware and software by small- and medium-sized businesses. These funds, however, could be used to purchase imported products. This program ended in 1981. Kreditanstalt für Wiederaufbau, op. cit., p. 21.

2/ Ibid., p. 21.

Table 20.--Commitments by the KfW, 1980-82

(In millions of deutschemarks)

Item	1980	1981	1982
Promotion of domestic investment:			
Loans	4,354	6,474	4,761
Small and medium-sized enterprises	3,006	4,531	3,316
Environment protection	523	542	576
Other structural measures	825	1,401	869
Grants	248	249	63
Export finance and investment abroad:			
Loans	3,068	3,051	4,418
Export finance	2,986	2,998	3,842
United financial loans	9	12	551
Other investment abroad	73	41	25
Grants	54	393	134
Promotion of the developing countries: 1/			
Loans	2,752	2,668	2,411
Grants	842	773	571
Total:			
Loans	10,175	12,193	11,590
Grants	1,144	1,415	768
Loan guarantees	2,176	1,370	152

1/ Financial Cooperation including the Technology Programme. Where export promotion funds were committed together with Financial Cooperation funds, (1982: 260 million deutschemarks) they are shown under export finance, although the mixed loan meets the requirements of development assistance.

Source: Official Statistics of the KfW.

innovation. 1/ In 1982, the KfW agreed to loan 20.5 million deutschemarks ($8.4 million) to KBG's as part of its program to encourage small- and medium-sized businesses. Terms on these loans are so favorable that they are equivalent to a cash grant of 69 percent of the value of the loan. Thus, in 1982, KfW gave the KBG's the equivalent of a grant of DM 14.1 million or $5.8 million. 2/

Under the First Innovation Program, a firm could receive an interest-free loan for 50 percent of the cost of commercial development of a new technology. If the firm did not make a profit on this development within 10 years, it did not have to repay the loan. The project to be funded had to

1/ G.G. Heaton, "West Germany," in Center for Policy Alternatives, Massachusetts Institute for Technology, National Support for Science and Technology, vol. 2, 1976, pp. 73 and 74.

2/ The cash grant equivalent of these loans was computed using the present value methodology described in U.S. International Trade Commission, Foreign Industrial Targeting and Its Effects on U.S. Industries, . . ., app. B. Terms on these loans are given in Kreditanstalt für Wiederaufbau, op. cit., p. 22. The West German long-term corporate bond rate was used for the market interest rate.

Table 21.--KfW loan commitments, by sector or by industries, 1981-82

Sector or industry	1981		1982	
	Amount	Percent of total	Amount	Percent of total
	Million deutschemarks		Million deutschemarks	
Agriculture	341.9	5.3	223.9	4.7
Mining, fuel, and power	348.8	5.4	361.5	7.6
Materials	753.1	11.6	393.5	8.3
Nonmetalic minerals	275.2	4.2	132.1	2.8
Iron and steel	125.8	1.9	63.8	1.3
Foundry	45.9	.7	25.8	.6
NonFerrous metals	55.4	.9	43.2	.9
Mineral oil	4.7	.1	2.2	.1
Chemicals	136.0	2.1	76.9	1.6
Sawmills	92.3	1.4	44.5	.9
Rubber	17.8	.3	5.0	.1
Capital goods	1,342.1	20.7	795.8	16.7
Steel construction	62.9	1.0	39.8	.8
Mechanical engineering	381.0	5.9	241.0	5.1
Vehicles	54.3	.8	53.4	1.1
Shipbuilding	43.3	.7	42.7	.9
Electrical engineering	294.5	4.5	128.4	2.7
Precision engineering, optics	81.6	1.3	60.4	1.3
Metal goods	424.5	6.5	230.1	4.8
Consumer goods	845.9	13.1	548.0	11.5
Glass, ceramics	66.2	1.0	39.2	.8
Wood products	166.1	2.6	111.9	2.4
Paper	84.5	1.3	56.1	1.2
Printing	199.6	3.1	120.7	2.5
Plastics processing	156.0	2.4	114.4	2.4
Leather	10.7	.2	11.7	.2
Textiles and apparel	162.6	2.5	94.0	2.0
Food, beverages, and tobacco	502.9	7.8	371.0	7.8
Private-sector services	1,611.0	24.9	1,370.9	28.8
Public services	446.1	6.9	497.8	10.4
Construction	282.0	4.3	198.7	4.2
Total	6,473.9	100.0	4,761.1	100.0

Source: Official statistics of the KfW.

involve an innovation that was new to West Germany and had prospects of commercial success. The project had to respond to a current social need. Finally, the project had to be too risky to receive private financing. Table 22 shows the funding of the First Innovation Program. For budgetary reasons, the Government stopped this program as of January 1, 1984.

The Risk Financing Association (WFG) is a private firm formed in 1975 by a consortium of banks. The WFG purchases equity in small innovative firms and provides managerial and technical help to these firms. If a firm prospers, the WFG will sell its equity holding at a profit. The WFG holds equity in from 20 to 30 small- and medium-sized business. The Government guarantees 75 percent of the funds the banks invest in the WFG and has lent less than 5 million deutschemarks to the WFG. Government officials believe that the WFG generally has failed to support innovative firms for two reasons. WFG has mirrored the attitudes of the banks that started it by being very reluctant to take risks. Furthermore, West Germany lacks a well-developed market for equity holdings in small- and medium-sized businesses. Therefore, the WFG has to sell its equity in successful businesses at moderate prices to the entrepreneurs who are its co-owners, and it is unable to sell its equity in unsuccessful businesses.

The Technologically Oriented Firms (TOU) program offers firms that are starting up in high-technology areas three types of assistance: consulting, grants of up to 75 percent of their development costs, and loan guarantees for 80 percent of their initial capital and marketing costs. TOU is a pilot program; it carries out activities involving microelectronics throughout the country, but it carries out only activities involving other sectors in the 6 regions where the BMFT already had consulting services. The TOU funding is 100 million deutschemarks to be spent over a 5-year period starting in 1983.

Table 22 shows combined expenditures on the First Innovation, the WFG, and TOU programs. KBG funding is not included, because this program is not expressly directed to high-technology firms. From 1979 to 1982, expenditures on these three programs never exceeded 0.05 percent of West German fixed capital formation. In 1983, projected expenditures on these programs were only 20.0 million deutschemarks, or $7.9 million.

Science and Technology

The West German Government funds research and development and tries to make technological information more readily available to firms. Much of the West German Government's science and technology activities are not targeted. The large majority of Government R&D expenditures are not directly aimed at commercial applications. Furthermore, much R&D funding is given through programs that are available to all industries. West German R&D support, however, seems to have given particular emphasis to the aerospace and electronics industries.

<u>The composition of research and development expenditures</u>.--In 1982, the German Federal and Länder governments budgeted DM 18.8 billion or $7.7 billion for research and development. Table 23 shows the composition of that expenditure by objective. The general promotion of knowledge received the largest share of these expenditures, 40.7 percent. Energy received the second largest share, 16.1 percent. Improving industrial productivity and technology received the third largest share, 12.0 percent.

Table 22.--West German Government expenditures on programs to provide capital for innovative firms, 1977-84

Year	WFG and TOU	First innovation	Total: Million deutsche marks	Total: Million dollars
	Million deutschemarks			
1977	1	1/	1/	1/
1978	2	1/	1/	1/
1979	4	17	21	11
1980	11	19	30	16
1981	4	17	21	9
1982	6	10	16	7
1983 2/	13	7	20	3/ 8
1984 2/	24	-	24	4/

1/ Not available.
2/ Projected.
3/ Calculated using an exchange rate for the first 11 months of 1983.
4/ Not calculated because the 1984 exchange rate is unknown.

Source: Col. 1 is official statistics of the BMFT; col. 2 is from the Federal Republic of Germany, Ministry of Finance, "Eighth Subsidy Report" and "Ninth Subsidy Report;" col. 4 is calculated by the staff of the U.S. International Trade Commission using official statistics of the International Monetary Fund.

Table 23.--Percentage distribution of West German Federal and Länder Governments' expenditures on research and development, by objectives, 1980-82

Objective	1980	1981	1982
Exploring and exploiting the earth and its atmosphere	2.8	2.8	2.7
Environment	3.6	3.9	3.5
Health	6.1	5.9	6.0
Energy	14.4	15.2	16.1
Agriculture	1.9	2.0	2.0
Industrial productivity and technology	10.0	10.9	12.0
Social problems	3.8	4.1	4.0
Space	4.3	4.1	4.1
Defense	10.1	8.8	8.9
General promotion of knowledge	43.1	42.3	40.7
Total	100.0	100.0	100.0

Source: Statistical Office of the EC.

Note.--Because of rounding, figures may not add to the totals shown.

Government's share of the financing of industrial R&D expenditures varies widely between sectors. Table 24 shows that in 1977 the Federal Government financed 52.9 percent of the aircraft industry's R&D, compared to 16.1 percent of total industrial R&D. The Federal Government also financed an above-average share of R&D for building; energy; wood, paper and printing; leather, textiles, and clothing; and electrical engineering.

Trends in commercial R&D support

West Germany gives both direct and indirect support to commercial research and development. Direct support is the funding of R&D projects. Indirect support is measures designed to encourage private firms to do more research, development, and innovation. These measures include the tax benefits for R&D (described in the "Tax policy" section), the funding for the WFG and TOU (described in the "Financial Assistance" section), the microelectronics program, aid to small- and medium-sized businesses, and aid to technology transfer described later in the "Science and Technology" section). The share of indirect aid in total aid generally has increased and is expected to be 31.4 percent in 1984 (table 25).

From 1975 to 1982, West German support for commercial R&D rose even after adjusting for inflation (table 26). The inflation-adjusted value of direct commercial R&D support rose by 39 percent; the inflation-adjusted value of total commercial R&D support rose by 66 percent.

Ministry of Research and Technology

The BMFT has primary responsibility for technology policy in West Germany and gives almost all Government grants for R&D. In 1982, 78 percent of the BMFT's grants went to firms, 11 percent went to independent laboratories, 8 percent went to universities, and 3 percent went to other recipients. 1/ In that year, the BMFT provided 90 percent of direct Government support for commercial R&D. 2/

The BMFT usually will not fund more than 50 percent of a project, but very large projects and projects that are close to basic research may receive up to 100 percent funding. If a project is commercially successful, the BMFT grant may have to be repaid. Because the BMFT funds few projects that are very close to commercial applications, however, it receives little in repayment.

The BMFT holds no patents, but the West German Government has the right to use the results of all R&D it funds at no charge, and it has licenses to all patents that result from that research. Firms or other institutions that carry out Government-funded R&D must be willing to license any resulting patents to third parties for an appropriate fee. 3/ If the BMFT finances over

1/ BMFT, "Wende in der Forschungspolitik," Feb. 1983, p. 25.
2/ Ibid., p. 18.
3/ BMFT, "The Federal Ministry for Research and Technology," Mar. 15, 1977, p. 4.

Table 24.--West German Federal Government support of R&D by industries, 1977

Industry	Total R&D expenditures: Million deutschemarks	Total R&D expenditures: Percent of total	Federal Government expenditures: Million deutschemarks	Federal Government expenditures: Percent of total	Federal Government expenditures: Percent of total R&D expenditures
Energy, water, and mining	739.5	4.4	257.1	9.5	34.8
Processing	16,054.9	95.4	2,442.5	90.5	15.2
Chemicals	4,644.5	27.6	165.3	6.1	3.6
Plastics, rubber, asbestos	172.4	1.0	8.8	.3	5.1
Nonmetallic minerals, glass, ceramics	109.3	.7	13.9	.5	12.7
Iron, nonferrous metals	393.3	2.3	62.3	2.3	15.8
Steel, mechanical engineering, vehicles,	5,643.9	33.6	1,265.8	46.6	22.4
Mechanical engineering 1/	1,765.7	10.5	264.0	9.7	15.0
Road vehicles	2,053.9	12.2	2/	2/	2/
Aircraft	1,279.7	7.6	677.1	25.0	52.9
Electrical engineering, precision mechanics, optics	4,869.1	28.9	903.2	33.3	18.5
Electrical engineering	4,461.8	26.5	870.0	32.1	19.5
Precision mechanics	280.7	1.7	32.6	1.2	11.6
Wood, paper, printing	37.5	.2	8.3	.3	22.1
Leather, textiles, clothing	38.4	0.2	10.7	0.4	27.9
Food	146.5	.9	4.2	.2	2.9
Building	35.4	.2	13.7	.5	38.7
Total	16,829.8	100.0	2,713.3	100.0	16.1

1/ Includes computers.
2/ Not available.

Source: Official statistics of the West German Government.

Table 25.--West German direct and indirect aid to commercial research and development, 1974-84

Year	Direct aid	Indirect aid	Total	Indirect aid's share of total
	----Million deutschemarks---			Percent
1974	1,295	353	1,648	21.4
1975	1,721	149	1,870	8.0
1976	1,525	106	1,631	6.5
1977	1,594	155	1,749	8.9
1978	1,930	145	2,075	7.0
1979	2,466	482	2,948	16.4
1980	2,491	573	3,064	18.7
1981	2,713	674	3,387	19.9
1982	3,475	791	4,266	18.5
1983	2,738	1,046	3,784	27.6
1984	2,778	1,271	4,049	31.4

Source: Official statistics of the Federal Republic of Germany.

Table 26.--West German aid for commercial research and development adjusted for inflation, 1975-82 1/

(In millions of 1982 deutschemarks)

Year	Direct	Total
1975	2,497	2,713
1976	2,084	2,228
1977	2,067	2,268
1978	2,396	2,576
1979	2,900	3,466
1980	2,749	3,381
1981	2,840	3,546
1982	3,475	4,266

1/ Data are adjusted for inflation using the EC Statistical Office price index for West Germany; years selected are those for which this index is available.

Source: Calculated by the staff of the U.S. International Trade Commission using official statistics of West Germany and the EC Statistical Office.

50 percent of a project, all results must be published; otherwise, only a summary of results must be published. Firms occasionally are reluctant to take more than 50-percent financing, because they want to avoid publishing their project's results. 1/

Table 27 shows the distribution of funds in the BMFT's 1984 budget by program area. Energy received the largest share of the funds, 39.1 percent; space was next with 11.4 percent. Projects to improve the competitiveness of the aviation and electronics industries received 2.5 and 4.1 percent of the budget, respectively.

Programs for selected technologies

The West German Government has a number of programs to support the development of specified technologies. Because these programs are close to commercial application, data on their funding are shown in the "Subsidy Report." Table 28 summarizes these data. In 1982, 73 percent of the total funding of these programs went to the microelectronics program; 15.3 percent went to improve raw-material refining and recycling; 5.1 percent went to develop new health-care products; and 4.9 percent went to improve waste disposal.

The microelectronics program offers firms grants of up to 800,000 deutschemarks for developing new products or for introducing new processes. Whereas the grants that encourage new products are likely to increase the competitiveness of the West German microelectronics industry, the grants that encourage introducing new processes probably will not. These grants encourage firms in a large variety of industries to buy equipment using microelectronics. These firms, however, are free to use their grants to purchase imported equipment. Grants to encourage the application of microelectronics, therefore, are unlikely to help the relative competitiveness of West German suppliers of microelectronics.

Aid to small- and medium-sized businesses

The Economics Ministry has three programs to support R&D by small- and medium-sized businesses: a program promoting R&D in West Berlin, a subsidy for R&D personnel costs, and a program to encourage these businesses to contract for external research. These programs apparently are designed to counteract the BMFT's tendency to give most of its aid to big business. 2/ Funding for these programs, which are all listed under promoting innovation in the Subsidy Report, is shown in table 29. In 1982, total grants given under these programs were equal to 409.8 million deutschemarks, or $168.6 million.

Disseminating information

The West German Government tries to make technological information more accessible to industry. Much of this activity is funded under the BMFT's information and documentation program, which is projected to receive 1.0

1/ G.G. Heaton, op. cit., pp. 73 and 74.
2/ G.G. Heaton, op. cit., p. 53.

Table 27.--Budget of the Ministry of Research and Technology, by programs, 1984

Aim	Program	Expenditure: Amount	Expenditure: Percent of total
		Million deutsche marks	
Securing resources	Energy R&D 1/	2,788.4	39.1
	Raw materials R&D	225.2	3.2
	Marine and Polar R&D	171.7	2.4
Improving industrial competitiveness.	Furthering innovation	83.5	1.2
	Physical and finishing technology.	100.0	1.4
	Electronics	291.0	4.1
	Data processing	58.8	.8
	Space	810.0	11.4
	Aviation	178.3	2.5
Improving living conditions	Health, nutrition, environment.	510.2	7.2
	Humanizing working conditions.	100.0	1.4
Improving public services	Transport	258.0	3.6
	Communications	150.8	2.1
	Information and documentation.	73.8	1.0
Basic research	Overall science promotion.	605.8	8.5
	Basic physical and chemical research.	669.9	9.4
Administration 2/		51.0	.7
Total		7,126.4	100.0

1/ Includes 758.3 million deutschemarks to be spent on reactor technology.
2/ Includes 1.4 billion deutschemarks in construction costs.

Source: Official statistics of the BMFT.

Table 28.--West German Government financial aid for technology in specified sectors, 1981-84

(In millions of deutschemarks)

Technology	1981	1982	1983 1/	1984 1/
Radioactive materials	0.1	-	-	-
Waste disposal	15.3	6.0	2.6	1.5
Improve working conditions	.1	.1	.1	-
Computer software	.3	.1	0	-
Energy conservation	.2	.4	17.1	8.0
Raw material exploration and extraction	.6	.-	.-	.-
Raw-material refining and recycling	24.8	18.7	6.1	5.4
Chemicals 2/	.2	.3	.1	-
Health	1.5	6.3	5.0	4.0
Electronics 3/	.9	.-	.1	-
Telecommunications 4/	0.3	0.7	0.5	-
Ocean technology 5/	.7	.2	.2	-
Construction materials	-	.4	1.3	1.2
Steel	-	-	16.1	9.8
Microelectronics	-	89.2	150.0	150.0
Total	45.0	122.4	199.2	179.9

1/ Projected.
2/ Emphasis is on conserving, recycling, and developing new sources of raw materials.
3/ Particular emphasis is on helping small- and medium-sized businesses adopt semiconductor technology.
4/ Directed at small- and medium-sized businesses.
5/ Includes offshore oil drilling.

Source: Federal Republic of Germany, Ministry of Finance, "Ninth Subsidy Report."

percent of the BMFT's budget in 1984 (table 27). Another program to encourage the dissemination of information is the Rationalization Commission (RKW). The RKW, which began in 1921, encourages and helps to implement any measures that would improve firms' productivity. The RKW does some research, but its primary function is to counsel firms and to help disseminate technical information. Funds for the RKW come from the Federal and State Governments, industry subscriptions, and income from contracts. 1/ The Federal Government's contribution to the RKW was 11.9 million deutschemarks, or $4.9 million in 1982, and it expects its contribution to increase to 12.3 million deutschemarks in 1983 and 12.2 million deutschemarks in 1984. 2/

1/ G.G. Heaton op. cit., pp. 78 and 79.
2/ Ministry of Finance, "Ninth Subsidy Report," p. 146.

Table 29.--Grants for promoting R&D by small and medium businesses, 1981-1984 1/

(In millions of deutschemarks)

	1981	1982	1983	1984
Promotion of R&D in Berlin	5.9	6.3	8.0	8.0
Personnel cost subsidy	361.0	390.0	350.0	350.0
Promoting contract research	11.0	13.5	13.8	40.0
Total	377.9	409.8	371.8	398.0

1/ Data for 1983 and 1984 are projections.

Source: Federal Republic of Germany Ministry of Finance, "Ninth Subsidy Report."

Cartel and Merger Policy

West German law in general forbids cartels, agreements among competitors to restrict competition. The law also forbids any merger that would allow a firm to create or strengthen a market-dominating position without bringing benefits that outweight the harm done by the market domination. Exemptions to these antitrust laws exist, but there is no evidence that the West German Government uses these exemptions to target specific industries.

West Germany's Act Against Restraints of Competition (ARC) specifically exempts the following sectors: agriculture, transportation, banking, insurance, and public utilities. The coal and steel industries are also exempt to the extent that their activities are covered by special provisions of the ECSC treaty. For example, West German steelmakers participate in the EC steel cartel. Most German cartels, however, are formed under provisions of the ARC that apply equally to all industries. These provisions allow industries to form cartels for certain purposes. The Federal Cartel Office (FCO) must be notified of all such cartels and acts to insure that the cartel privilege is not abused.

Types of cartels

The number of legal cartels in West Germany is shown in table 30. From 1973 to 1978, the number of these cartels increased by 15 percent to 250. The most likely reason for the increase was a court decision that increased the range of activities that, if done without notifying the FCO, could be considered violations of the ARC. After 1978 the increase stopped; there were 249 legal cartels in 1980. The most common type of cartel is the export cartel, of which there were 64 in 1980.

West German law divides export cartels into two types: those that affect only foreign trade and those that also affect domestic markets. Before 1973, the FCO contended that it had to be notified of export cartels that affected only foreign trade and that it could act to prevent abuses of such cartels. In 1973, however, the German Supreme Court ruled that the FCO had no right to be notified of cartels that had no domestic effects. In 1980, the ARC was amended to require that the FCO be notified of all such cartels. Furthermore, the West German Government can order cartel agreements to be discontinued or modified if they violate principles recognized by the Government in international treaties or if they harm West Germany's international trade or payments interests. 1/

The second most common type of cartel, condition cartels, allow firms to jointly set conditions of sale. These cartels often include agreements on the conditions by which purchasers qualify for rebates.

Standardization, rationalization, specialization, and cooperation cartels allow firms to undertake various joint actions to reduce costs or improve product quality. Standardization cartels allow the application of a uniform set of standards. Rationalization cartels are designed to improve firms' efficiency or productivity. Rationalization cartels may involve agreements on price if the rationalization measures cannot be achieved without a price agreement and if the benefits of the rationalization outweigh the harm of the price agreement. 2/ Specialization cartels allow firms to rationalize production by agreeing to specialize in certain product lines. Cooperation cartels allow any form of cooperative behavior that improves efficiency, but they are limited to small- and medium-sized businesses. The FCO will not allow cooperation cartels among firms whose combined market share exceeds 15 percent. The most common activities of cooperation cartels are joint distribution, joint purchasing, and specialization.

Crisis cartels are allowed if demand for a product undergoes a lasting decline. Firms in a crisis cartel may jointly plan how to adjust their capacity to the lower demand. Crisis cartels are allowed to exist only for a short time period, usually no more than 3 years. These cartels must follow a schedule for reducing capacity. From 1958 to 1983, only one such cartel existed. That cartel, which began in 1983, involves steel mats for reinforcing concrete.

Emergency cartels are authorized by the Federal Minister of Economics when he feels that the public interest requires a cartel that does not qualify under any other legal exemption. For example, one such cartel involved an agreement among cigarette manufacturers to stop advertising. From 1958 to 1980, only four emergency cartels were allowed. 3/

1/ For a description of West German law involving export cartels, see H. Holzler and W. D. Brown, "Antitrust Control Over 'Pure' Export Cartels," Antitrust Bulletin, 27 (4), winter 1982, pp. 957-991.

2/ Rationalization cartels with price agreements usually are joint-sales organizations.

3/ OECD, Annual Reports on Competition Policy in Member Countries, 1981, No. 2, Paris, 1981, p. 28.

Table 30.--Legal cartels in West Germany, by types, 1973-80

Type	March 1973	March 1974	March 1975	March 1976	March 1977	March 1978	December 1978	December 1979	December 1980
Condition	42	42	43	44	44	44	45	45	43
Rebate	19	18	18	16	14	12	11	11	7
Condition and rebate	17	18	16	15	16	15	15	14	14
Crisis	0	0	0	0	0	0	0	0	0
Standardization	8	8	8	9	6	6	5	5	4
Rationalization	3	4	3	3	4	3	3	3	3
Rationalization with a price agreement	10	11	10	10	11	13	14	14	16
Specialization	25	27	30	28	26	30	29	29	28
Specialization with a price agreement	23	21	24	26	26	29	30	30	29
Cooperation	0	1	7	12	21	26	33	33	39
Export	64	66	64	62	58	58	59	59	60
Export with domestic effect	5	5	4	4	5	4	4	4	4
Import	0	0	0	0	0	0	0	0	0
Emergency	1	1	1	1	2	2	2	2	2
Total	217	222	228	230	233	242	250	249	249

Source: Official statistics of the OECD, except 1979 official statistics of the West German Federal Cartel Office.

Mergers

During the late 1960's, the West German Government actively promoted mergers, particularly in the coal and aircraft industries. 1/ At that time, German antitrust laws put few restraints on mergers. In 1973, the ARC was amended to forbid mergers that strengthened or created a market-dominating position unless the merger improved the conditions of competition enough to outweigh the harm done by the market domination.

If the FCO rejects a merger because of the harm done to competition, the firms may apply to the Economics Ministry for special permission. Such permission has been granted four times: twice as part of the Government's energy policy and twice to rescue financially troubled firms. 2/ After the 1973 oil shock, the Ministry allowed Veba to buy part of another energy producer, because the Ministry felt that a strong firm would help insure the nation's energy supplies. The Economics Ministry later allowed Veba to sell part of its holdings to British Petroleum (BP) (West Germany) after BP (West Germany) promised to supply German markets with North Sea gas. The Economics Ministry allowed two textile machinery manufacturers to merge to save several hundred jobs. The Economics Ministry also allowed IBH to buy Webow, although both firms produced road construction equipment. The Ministry felt that Webow was financially troubled and was too small to engage in international marketing. IBH recently went bankrupt.

1/ Jack N. Behrman, op. cit., app. p. 17. The Government also encouraged a recent merger in the aircraft industry.

2/ In addition, Thyssen, which produces machine tools, was allowed to buy a 45-percent share of a financially troubled machine tool producer. The Economics Ministry, however, would not allow a complete merger.

United Kingdom Industrial Policy and Targeting

Historical Overview

In the 1950's, the British Government engaged in little that could be considered targeting. Dissatisfaction with the slow growth of the economy during this period led the Government to develop a planning apparatus, which in large part imitated the French system of interest group consultations. 1/ In 1962, the Conservative government established the National Economic Development Council (NEDC) and separate Economic Development Councils (EDC's) for specific industries. The NEDC and the EDC's have served as forums where Government, management, and labor representatives discuss the future of the national economy and their specific industry. The Conservative government of the early 1960's also began to give increased financial help to specific industries, especially aircraft, cotton, ocean shipping, and shipbuilding. 2/

The Labor government that held office from 1964 to 1970 was also committed to planning and to assisting specific industries. A national plan was developed in 1965, but it was never effectively implemented. This plan failed, because it was based on forecasts that overestimated economic growth and that did not foresee the devaluation of the pound, because it arbitrarily allocated growth to various industries and because of tensions between different Government agencies. In 1967, the Government passed the Industrial Expansion Bill and the Industrial Reorganization Act. The Industrial Expansion Bill enabled the Government to give financial help to specific industries to improve efficiency or increase capacity without specific Parliamentary approval. The Industrial Reorganization Act established the Industrial Reorganization Corporation (IRC) to promote industrial efficiency, particularly by promoting mergers. The activist industrial policy of the Government, however, apparently had little effect on the overall economy. 3/

The Conservative government that held office from 1970 to 1974 promised to reduce government involvement in the economy, particularly the support of declining industries. This government abolished the IRC and reduced the importance of the NEDC. Rising unemployment, however, soon led this government to adopt a more interventionist policy, including rescuing Rolls Royce and Upper Clyde Shipbuilders from bankruptcy and passing the Industry Act of 1972. Two sections of this act allow financial help to be given to industry. Section 7 aid, which consists primarily of interest relief grants and low-interest loans, is given to firms in specified regions. Section 8 aid, which is usually in the form of a grant, has two major purposes: general investment incentives, and aid to specific industries. From 1972 to September 1978, programs were established under section 8 to help 16 industries: wool textiles, clothing, ferrous foundries, machine tools, red-meat slaughterhouses, paper and board, textile machinery, printing machinery, poultry meat processing, nonferrous foundries, electronic components, instrumentation and automation, drop-forging, footwear, energy conservation, and microelectronics.

1/ Lawrence Franko, op. cit. p. 21.

2/ G.G. Denton, "Financial Assistance to British Industry," in W.M. Corden and Fels, ed. <u>Public Assistance to Industry</u>, Boulder, Colo., Westview Press, 1976, p. 120.

3/ Ibid., p. 121.

The Labor government that held office from 1974 to 1979 followed a policy of greater Government ownership of private industry and increased reliance on planning under NEDC's auspices. In 1975, the Government established the National Enterprise Board (NEB) to serve as a holding company for many of its equity interests in private businesses. The extension of Government ownership also included the nationalization of the shipbuilding and aircraft industries in 1977. The Government established sector working parties (SWP's) for 37 industries under the NEDC. These 37 industries together produced 40 percent of manufacturing output and employed 46 percent of manufacturing labor. 1/ Like the EDC's, the SWP's comprised Government officials, business executives, and union representatives. Unlike the EDC's, however, the SWP's explicit goal was to improve their industry's economic performance, and it was felt the SWP's might develop plans for targeted Government aid. SWP's were concentrated in manufacturing, whereas EDC's continued to function outside of manufacturing. The SWP's recommended a number of policy changes, including several financial aid schemes, which the Government implemented, but SWP's never effectively cooperated with the NEB. Furthermore, individual firms often ignored SWP recommendations. 2/ Attempts to aggregate the objectives of each SWP into a national plan failed, because these objectives did not refer to the same time periods nor were they expressed in common terms. Furthermore, these objectives often were not met. All 37 SWP's wanted stable or declining import penetration in their sectors, but for 23 sectors, import penetration increased. 3/

The Labor Government of the late 1970's deemphasized high-technology sectors. Research and development grants fell from 430 million pounds in fiscal 1974 to 250 million pounds in fiscal 1978. Furthermore, during this period, high-technology industries received very little aid from the NEB. 4/

From 1979 to the present, the Conservative Government of Prime Minister Margaret Thatcher has held office. This Government has sold a substantial part of the nationalized industries and plans to make more such sales in the future. Furthermore, the Government established new guidelines for the NEB that require it to sell off its holdings in private businesses as soon as a sale is commercially feasible.

The role of the NEDC also changed under the Thatcher government. Some SWP's stopped operating, and the rest took on the name and functions of the EDC's. The EDC's now serve to improve communications between Government, business, and labor. The NEDC and the EDC's also do not actively lobby for more Government aid, but they might consult on the structure of aid programs.

1/ Data do not include the automobile industry, which had a separate working party. OECD, "United Kingdom," Paris, 1978, p. 58.

2/ Wyn Grant, The Political Economy of Industrial Policy, London, Butterworths, 1982, p. 54. Michael Davenport, "Industrial Policy in the United Kingdom," in F.G. Adams, and L.R. Klein, Industrial Policies for Growth and Competitiveness (Lexington, Mass., D.C. Heath, 1983), p. 342.

3/ Lawrence Franko, op. cit., p. 32, and Wyn Grant, op. cit., p. 67. As was noted in the first section of this report, a decline in imports in these sectors probably would necessitate either an increase in imports in other sectors or a decrease in exports of some sectors.

4/ Lawrence Franko, op. cit., p. 32.

Both the amount and the composition of financial assistance to industry under the Thatcher government differ from the last years of the Labor government (table 31). Such aid, both as a share of gross domestic product and in total value adjusted for inflation, was generally higher under the Conservative government. By both measures, however, these subsidies declined in 1982, the last year for which data are available. Under the Conservative government, employment and training, and export assistance increased their share of total aid. Sectoral development and structural adjustment; research, development, and innovation; and regional policy measures decreased their share of aid. 1/

Table 32 shows the distribution of Government financial aid and research and development funding in fiscal 1980, by industries. These data exclude tax benefits, but such benefits usually are not directed to specific industries. Industries whose share of financial aid is higher than their share of value added are metal manufacture, electrical engineering, mechanical engineering, and clothing and footwear. Two industries received the bulk of R&D aid: aerospace received 50 percent, and electrical engineering received 19 percent.

Home-Market Protection

The importance of home-market protection to British industry began to decline in the 1960's as the United Kingdom participated in a number of international negotiations designed to reduce barriers to international trade. Furthermore, since the mid-1970's, the United Kingdom has set its policies on imports jointly with the other countries of the EC rather than independently. Therefore, home-market protection will be discussed here only briefly.

The United Kingdom has protected its industries from import competition through both tariff and nontariff barriers. In 1980, 22 percent of all British visible imports were subject to tariffs, nontariff barriers, or both. 2/ British tariffs generally give higher levels of protection to industries producing more processed goods and to agriculture. 3/ In 1980, duties were charged on 17 percent of all British visible imports and 21 percent of British imports of manufactured goods. The average tariff rate on dutiable imports was 9 percent. 4/ Nontariff barriers include quotas, orderly marketing agreements, and public procurement preferences. For example,

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1/ The Conservative Government also sharply reduced the coverage of regional aid. In 1979, 44 percent of the working population lived in areas eligible for regional aid; in 1983, 28 percent of the working population lived in such areas. Secretary of State for Trade and Industry, "Regional Industrial Development," December 1983, p. 17.

2/ C. Jones, "Visible Imports Subject to Restraint," Government Economic Service Working Paper No. 62, 1983, pp. 10.

3/ N. Oulton, "Effective Protection of British Industry," in W.M. Corden and G. Fels, eds. op. cit., p. 81.

4/ C. Jones, op. cit., pp. 10 and 11.

Table 31.--United Kingdom financial assistance, by specified industries, 1976-82 1/

Year	Regional policy measures	Research development and innovation	Small firms	Sectoral development and structural adjustment	Employment and training	Export assistance	Total: Million pounds	Total: Million 2/ 1980 pounds	Total: Share of GDP
	Share of total								
	Percent								Percent
1976-----	38.8	10.7	-	37.2	3.7	9.6	2,459	4,126	2.0
1977-----	36.3	12.2	-	36.3	8.9	6.4	2,104	3,049	1.5
1978-----	27.3	8.5	-	51.7	5.6	6.9	3,403	4,556	2.1
1979-----	24.1	10.6	-	50.6	4.9	9.8	3,646	4,300	1.9
1980-----	22.8	8.9	-	47.1	11.3	9.9	4,970	4,970	2.2
1981-----	23.7	9.0	-	44.2	11.5	11.6	5,438	4,860	2.2
1982-----	24.1	9.6	.2	44.7	11.0	10.2	5,440	4,477	2.0

1/ These data include grants, an estimate of foregone interest on loans, payments on cost sharing contracts, launch aid, and equity infusions. The data are not adjusted to take into account future payments the Government might receive as returns on equity or as a result of launch aid agreements or cost-sharing contracts. Data on assistance are on a fiscal-year basis; data on Gross Domestic Product (GDP) and price levels are on a calendar year-basis. The British fiscal year begins on Apr. 1.

2/ Adjusted for inflation using the consumer price index.

Source: Official statistics of the United Kingdom Department of Trade and Industry except for the last 2 columns, which were calculated by the staff of the U.S. International Trade Commission using official statistics of the International Monetary Fund on consumer prices and GDP.

Table 32.--Shares of United Kingdom financial aid, research and development funding, and value added in manufacturing, by industries, 1980 1/

(In percent)

Industry	Financial aid	R&D funding	Value added
Food drink and tobacco	4	2/	13
Chemicals	13	2	14
Metal manufacture	15	4	4
Mechanical engineering	17	14	15
Electrical engineering	15	19	10
Shipbuilding	1	3	2
Vehicles	7	2	8
Aerospace	1	50	3
Metal goods	4	2/	6
Textiles	4	1	4
Clothing and footwear	4	1	3
Bricks, pottery etc	3	1	4
Timber, furniture	1	1	3
Paper, printing	8	1	8
Other manufacturing	2	1	4

1/ Data are on a fiscal-year basis and include regional development aid. These data are not net of repayments; otherwise how they were prepared is described in footnote 1 of table 31.
2/ Less than 0.5 percent.

Source: Official statistics of the United Kingdom Department of Trade and Industry.

in the mid-1970's the Government negotiated orderly marketing agreements with Japan to protect the automobile and bearings industries. (The United Kingdom Government's current policy rules out negotiating orderly marketing agreements independently of the EC.) A discussion of two of the more important nontariff barriers follows.

Public procurement

Public procurement preferences were used to encourage high-technology industries, particularly computers and aircraft. Public procurement preferences can be particularly important in the United Kingdom because of the large extent of state ownership of industry there relative to the United States. Among other holdings, the British Government owns the telecommunication system, the electric utilities, the railways, the coal industry, and most of the steel and airline industries. Many of these state-owned entities are exempted from the GATT Agreement on Government Procurement. Hence in spite of the EC's signing the Agreement, public procurement in the United Kingdom could possibly be of considerable importance as a targeting tool. An example is the computer industry, where public purchases were 31 percent of the British computer market; the central Government bought 15 percent, public corporations bought 12 percent, and local governments bought 4 percent. 1/

1/ Denton, op. cit., p. 142.

The use of public procurement preferences has declined for several reasons. On January 1, 1981, the United Kingdom acceded to the GATT Agreement on Government Procurement. 1/ This agreement, however, does not apply to all areas of government procurement. The use of procurement preferences also is declining because of a growing realization that these preferences often are a costly and ineffective method of supporting domestic industries. For example, in the past, procurement preferences sometimes forced British Airways to buy planes that were inferior to those available to its competitors. This policy sometimes also led British aircraft producers to produce planes so tailored to the needs of British Airways that they were hard to market to other carriers. 2/ Since 1974, the Government has not influenced British Airways to buy British planes, even though the GATT agreement does not cover British Airways' procurement. The importance of procurement preference in the United Kingdom also will decline as the Government sells off large parts of the nationalized industries. (These sales are described in the "Financial Assistance" section.)

The use of procurement preferences in the United Kingdom, however, has not been totally eliminated. The United Kingdom Government sometimes gives preferences to firms in depressed areas in procurement that are not covered by the GATT agreement. Furthermore, in November 1980, the Government set aside 10 million pounds to assist public entities to use their orders to aid in the development of United Kingdom industry. Much of this money is to fund purchases of high-technology projects for use where their high visibility will serve to advertise the technological capabilities of British industry. 3/ This program apparently also involves procurement not covered by the GATT agreement.

Offshore Supplies Office

The purpose of the Offshore Supplies Office (OSO) of the Department of Energy is to insure British industry a full and fair opportunity to supply equipment used in offshore oil drilling in the United Kingdom. The OSO keeps in constant contact with firms operating oil rigs in British territorial waters to insure that they give British suppliers full consideration in their purchasing. Offshore operators must submit quarterly reports showing the sources of materials and equipment ordered and in some cases stating why British suppliers did not win certain orders. Some offshore operators allege that Government permission to begin exploiting oil deposits has been delayed for rigs whose British content is low. The OSO contends that it does not

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1/ This Agreement is discussed in the section of this report entitled "The European Community and Industrial Policy."

2/ John Redwood, Public Enterprise in Crisis, Basil Blackwell, Oxford, 1980, pp. 22 and 23.

3/ Wyn Grant, op. cit., p. 92.

intend to discriminate against foreign suppliers and that its activities are consistent with the United Kingdom's international agreements. 1/

Tax policy

The British Government generally has not targeted tax benefits to specific industrial sectors (the one exception is aid to shipbuilding). The Government has used tax policy to encourage investment, employment, research and development, and industrial reorganization. These incentives, however, apply equally to all industry or all manufacturing; they do not favor specific industries.

The major incentive for capital investment is accelerated depreciation. Plant and equipment purchased after March 1972 can be totally depreciated in 1 year. If a company's profits are too low to allow it to take full advantage of this provision, this deduction may be taken against income in any of the 3 previous years or in a future year. This provision applies equally to all industries. 2/

The British Government also has certain tax provisions that encourage R&D. Firms may fully depreciate all assets used in R&D in 1 year, including buildings and land. (All plant and equipment used in manufacturing in the United Kingdom may be fully depreciated in 1 year, but buildings may not be.) Firms may charge all payments to research associations to current expenses. If the Department of Trade and Industry (DTI) approves, these research associations' profits are tax exempt. Research associations make little profit, however, and DTI requires them to put their profits back into research to keep their tax exemption.

Two tax policies specifically aid shipbuilding. To eliminate the effects of certain indirect taxes on their costs, shipbuilders receive relief equal to 2 percent of the contract price of their ships. Commercial ships larger than 15 gross tons are exempt from the value-added tax. 3/ Value-added tax rates are 15 percent on domestic sales and zero on export sales.

Financial Assistance

The British Government gives financial assistance to firms through loan guarantees, low-interest rate loans, exchange risk cover, and equity. Since 1979, the emphasis of the Government's financial assistance programs has changed to put increasing stress on aid to new-technology rather than mature industries.

1/ Besides monitoring offshore oil drillers, the OSO encourages the British offshore supply industry by providing it with market information and doing research and development.

2/ OECD, International Investment and Multinational Enterprises, p. 229.

3/ U.S. Department of Transportation, Maritime Subsidies, Washington D.C., 1983, p. 152.

Much of the United Kingdom's financial assistance is not targeted, but is given to encourage modernization and the growth of innovative firms in a broad spectrum of industries. Certain depressed industries, however, benefit from equity investments in nationalized firms. Furthermore, special aid programs exist for the shipbuilding and aircraft industries.

Section 8 aid

Section 8 of the Industrial Development Act of 1982 authorizes selective financial aid to industry. 1/ Aid under section 8 generally funds a capital investment project, so capital-intensive industries tend to benefit the most from section 8. The Government tries to limit section 8 aid to cases where without aid a firm would not conduct the project in the proposed form in the United Kingdom. This criterion tends to favor large multinational firms that can readily locate a project outside the United Kingdom. Section 8 aid also tends to favor large firms, because aid usually is not given for investment projects smaller than a certain size. To redress the balance of section 8 aid between large and small firms, the Government started a loan guarantee program that is limited to small firms. Aid under Section 8 of the Industry Act comes in three types: aid available to all projects that meet certain general criteria, aid under special programs that are not explicitly oriented to a sector, and aid given under sector-specific programs. 2/

The general criteria under which major projects in manufacturing may receive aid are that the project be in the national interest and commercially viable. The project must also either be readily able to be located outside the United Kingdom or it must substantially improve the industry's performance. Furthermore, the project must increase output in the United Kingdom or introduce a significant innovation to the United Kingdom. 3/ Table 33 shows aid under these criteria by industry. The mechanical engineering industry received 25.4 percent of this aid, and the electrical engineering industry received 18.9 percent. Aid averaged 11.6 percent of the costs of all assisted projects, 12.2 percent of the costs of mechanical engineering projects, and 11.1 percent of the costs of electrical engineering projects.

Section 8 has three major special programs that are not sector specific; a loan guarantee program for small business, an energy conservation plan, and a selective investment program. 4/ The loan guarantee program started on

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1/ Section 8 was originally part of the Industry Act of 1972.

2/ Sec. 8 originally was part of the Industry Act of 1972 and now is part of the Industrial Development Act of 1982.

3/ Secretaries of State for Trade and Industry, Scotland, and Wales, Industrial Development Act 1982 Annual Report, London, July 1983, p. 90.

4/ There was also an accelerated project scheme that began in April 1975. The purpose of this scheme was to encourage businesses planning investments to begin these projects sooner, thus alleviating the recession. This project closed for applications on July 1976.

Table 33.--Grants offered under general criteria of the Industrial Development Act of 1982 1/

Industry	Total outlays on assisted projects		Grants	
	Value	Percent of total	Value	Percent of total
	1,000 pounds		1,000 pounds	
Mining and quarrying	5,424	2.1	400	1.3
Food, drink, and tobacco	2,421	.9	100	.3
Chemical and allied industries	27,159	10.5	2,599	8.7
Metal manufacturing	26,993	10.5	3,850	12.9
Mechanical engineering	62,186	24.1	7,600	25.4
Electrical engineering	50,927	19.8	5,645	18.9
Vehicles	32,763	12.7	3,875	13.0
Metal goods	7,856	3.0	1,000	3.3
Textiles	10,700	4.1	954	3.2
Bricks, pottery, and glass	7,761	3.0	675	2.3
Paper, printing, and publishing	16,212	6.3	2,075	6.9
Other manufacturing	7,198	2.8	1,130	3.8
Total	257,610	100.0	29,903	100.0

1/ Data include all grants offered from July 17, 1979 to March 31, 1983. These grants originally were made available under the Industry Act of 1972.

Source: Official statistics of the United Kingdom.

June 1, 1981. Under this program, the Government will guarantee 80 percent of the value of a loan for a quarterly premium of 3 percent of the loan's outstanding balance. The program applies to loans of from 2 to 7 years duration and to values not exceeding 75,000 pounds. By March 31, 1983, 312.6 million pounds' worth of loans had been guaranteed. 1/ The energy conservation scheme supports projects that reduce energy consumption. On March 31, 1983, aid paid under this scheme totaled 25.1 million pounds. 2/ The selective investment program is designed to encourage investment projects in manufacturing that will bring significant economic benefits. The criteria for choosing projects under this program are that without aid the project will not be undertaken or will not be undertaken in the same form or at the same time, and that the project be commercially viable and significantly improves performance. This program normally funds projects involving investments of over 500,000 pounds. 3/ Aid given under this program averages 10.6 percent of the total costs of the projects being funded. Over one-half this aid has gone to the chemical industry (table 34). This program closed for applications in September 1979.

1/ Ibid., p. 7.
2/ Ibid.
3/ OECD, "Inventory of Adjustment Measures in the Industrial Sector Taken by Member Governments Since 1974," Paris 1979, p. 98.

There have been 24 sector-specific programs under section 8. Table 35 describes these programs. Before the Conservative Government took power in 1979 these programs concentrated on mature industries. Since 1979 they have increasingly concentrated on new-technology sectors. Eight sector-specific programs have begun since 1979; one of these schemes encourages the use of coal, two help depressed industries restructure and reduce capacity, four encourage specific new-technology sectors, and one helps small engineering firms to buy advanced equipment.

The coal-firing scheme provides grants of up to 25 percent of the cost of replacing industrial equipment that uses oil or gas with equipment that uses coal. Total grants under this program may not exceed 50 million pounds. All private firms except those in banking and insurance are eligible for these grants. Acceptance by this program makes firms eligible for low-interest EC loans for 50 percent of the cost of this project.

The private-sector steel plan offers three types of aid. Grants are available for up to 85 percent of the payments made to discharged workers. Grants are also available for 25 percent of the cost of closing or restructuring plants. Finally, the industry has agreed to contribute to a fund to pay members' costs of closing facilities. Grants are available for 25 percent of the total amount of this fund. Approximately 36 percent of the aid

Table 34.--Grants under the selective investment scheme 1/

Industry	Total outlays on assisted projects: Value	Total outlays on assisted projects: Percent of total	Grants: Value	Grants: Percent of total
	1,000 pounds		1,000 pounds	
Food, drink, and tobacco	30,506	2.9	2,720	2.5
Chemical and allied industries	568,349	54.5	59,864	54.1
Metal manufacturing	17,287	1.7	1,818	1.6
Mechanical engineering	68,141	6.5	6,201	5.6
Electrical engineering	50,234	4.8	6,290	5.7
Marine engineering	900	.1	25	2/
Vehicles	72,091	6.9	8,927	8.1
Metal goods	17,444	1.7	1,761	1.6
Textiles	33,434	3.2	3,175	2.9
Clothing	5,283	.5	568	.5
Bricks, pottery, and glass	19,265	1.8	2,029	1.8
Timber and furniture	1,200	.1	193	.2
Paper, printing, and publishing	100,121	9.6	10,598	9.6
Rubber products	28,057	2.7	3,167	2.9
Plastics	26,360	2.5	2,924	2.6
Other manufacturing	4,530	.4	439	.4
Total	1,043,202	100.0	110,699	100.0

1/ Data include all grants offered up to Mar. 31, 1983. Payments actually made up to that time were 82.34 million pounds.
2/ Less than 0.05 percent.

Source: Official statistics of the United Kingdom.

under this scheme will go to discharged workers, 21 percent will go to firms for closing or restructuring, and 43 percent will go to the industry's fund. The steel castings scheme also provides grants to an industry fund that pays firms that are closing facilities. (In addition, industry payments to such funds qualify for special tax treatment under Section 406 of the Income and Corporate Tax Act.)

The Flexible Manufacturing Systems Scheme (FMSS) gives grants for consulting studies and installation costs of flexible manufacturing systems. The Government will pay 50 percent of consulting fees to a maximum grant of 50,000 pounds, but only if the consultant is one of those authorized by the Department of Trade and Industry. The Government will also pay one-third of installation costs. From June 8, 1982, until March 31, 1982, aid offered under the FMSS was 219,000 pounds for 13 studies and 1.2 million pounds for installing 4 systems. 1/ Similarly, the Robot Support Program will pay one-third the cost of installing robots. Furthermore, this program will pay 50 percent of the cost of studies by authorized consultants. Grants for consulting studies are provided under the Support for Innovation program. (This program is described in the "Science and Technology" section.)

The Fiber Optics Scheme is funded jointly under Support for Innovation and section 8. This scheme covers part of the cost for designing, developing, and launching a new product or process in this industry.

The computer-aided design and test equipment scheme will pay one-third of the eligible costs of acquiring and installing this equipment. A grant under this program may not exceed 60,000 pounds.

The Small Engineering Firms Investment Scheme (SEFIS) helps engineering firms that employ fewer than 200 people to buy capital equipment. SEFIS will give a grant of one-third of a project's eligible costs. Eligible costs may not exceed 200,000 pounds and exclude value-added tax, regional development grants, and EC grants. The first SEFIS scheme quickly committed all its allotted funds, 31.3 million pounds, and the Government announced a second SEFIS in March 1983. 2/ The second SEFIS will last for 3 years and be allotted 100 million pounds. Unlike the first SEFIS, recipients of aid under the second SEFIS need not be in the engineering industries.

Except for the two restructuring programs, the section 8 schemes started by the Thatcher government are not targeted to aid investment by specific industries. A wide spectrum of industries use this aid to purchase equipment. These schemes are often tied to purchases of specific types of equipment and might be used to target supplying industries. Aid under these schemes, however, can be, and often is, used to purchase equipment made

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1/ Secretaries of State for Trade and Industry, Scotland, and Wales, op. cit., p. 102.

2/ Firms employing up to 500 people are eligible for the second SEFIS.

Table 35.--Sectoral aid schemes under sec. 8 as of Mar. 31, 1983

Scheme	Date introduced	Final date for applications	Total cost of assisted projects	Aid offered	payments made
			--------1,000 pounds-------		
Wool textiles					
Stage 1	July 1973	December 1975	74,810	16,675	16,183
Stage 2	November 1976	December 1977	30,494	7,500	6,194
Ferrous foundry	August 1975	December 1976	284,457	61,930	47,899
Machine tools	August 1975	December 1977	168,154	34,388	22,899
Clothing	October 1975	December 1977	93,450	20,872	13,878
Paper and board	June 1976	June 1978	86,986	20,250	18,725
Nonferrous foundry.	January 1977	July 1978	101,324	21,712	11,796
Electronic components.	January 1977	December 1978	59,200	15,995	11,700
Instrumentation and automation.	November 1977	April 1979	50,120	8,484	6,844
Drop forging	November 1977	June 1979	24,361	5,841	4,044
Footwear	April 1978	March 1980	29,227	5,032	3,226
Printing machinery.	August 1976	December 1977	73,256	14,116	8,795
Textile machinery	August 1976	December 1977	66,660	12,781	6,270
Poultry meat processing.	August 1976	March 1977	42,986	8,552	7,869
Red-meat slaughterhouse.	November 1976	November 1980	116,156	16,182	11,490
Microelectronic support.	July 1978	March 1985	141,727	33,881	11,086
Coal firing	May 1981	December 1983	62,187	11,885	1,814
Private-sector steel.	December 1981	June 1984 1/	53,747	15,521	10,325
Small engineering firms investment. 2/	March 1982	May 1982	93,795	31,265	10,918
Flexible manufacturing systems.	June 1982	3/	4,223	1,419	0
Robotics	August 1982 4/	3/	3,929	1,284	0
Fiber optics	July 1981	July 1986	14,210	1,300	0
Computer-aided design and test equipment.	August 1982	August 1984	26,760	6,560	389
Steel castings	December 1981	3/	19,147	6,504	6,504

1/ For aid in making payments to dismissed workers. Applications for other categories of aid had to be filed by September 1982 unless related to closures that could not have been foreseen at that time.

2/ Does not include aid under the second SEFIS program.

3/ Not applicable.

4/ Previously aided under the Science and Technology Act of 1965.

Source: Official statistics of the United Kingdom.

outside the United Kingdom. 1/ For example, 55 percent of grants under SEFIS, 40 percent of aid under FMSS, and about 67 percent of the aid under the robotics scheme went to purchase imported equipment. Therefore, these programs are unlikely to substantially increase the competitiveness of the United Kingdom supplying industry in world trade. 2/

Other industry-specific aid programs

Two industries in the United Kingdom receive financial aid under special programs separate from section 8--aircraft and shipbuilding. A 1949 act of Parliament authorizes launch aid, Government funding of 50 percent of the market development costs of a new aircraft or aircraft engine. All agreements to give launch aid require the industry to repay the aid, but the Government has always lost money on launch aid. 3/ Government officials suggest that launch aid is given because European capital markets cannot offer the long-term financing at fixed interest rates that aircraft projects need. Launching aid is discussed in more detail in the section on targeting tools for the aircraft industry.

The Government has two special programs of financial aid to shipbuilding: an intervention fund, and the home credit scheme. 4/ The intervention fund was started in 1977 to help U.K. shipyards compete in the world market. In fiscal 1982, the Government offered grants of 30 million pounds on orders for 19 ships totaling 139,000 gross registered tons. From the fund's beginning until the end of fiscal 1982, the Government offered grants of 250.5 million pounds on orders of 192 ships totaling 1.8 million

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1/ Furthermore, subsidiaries of foreign firms are among the authorized consultants for those projects that pay consulting fees.

2/ Programs to expand the domestic market for a particular type of equipment may increase the competitiveness of the domestic supplying industry even without a constraint on imports. If factors such as nearness to the market give the domestic industry an advantage, then increasing domestic demand might increase the sales of the domestic industry by more than the sales of its foreign competitors. If firms' costs decline as they gain experience, a phenomenom called learning by doing, then the increased sales will lower the domestic industry's costs relative to those of their competitors. Representative of British industry, however, argue that these programs often harm the competitiveness of the domestic supplying industries. They feel that by expanding the market before the United Kingdom industries can respond to the increased demand, these programs increase imports' share of the United Kingdom market.

3/ The Government's receipts from launch aid contracts rarely exceeded its contributions, and in the rare cases where receipts did exceed contributions, the Government still received less than a market rate of return on its investment. N. K. Gardner, "Economics of Launching Aid," in Alan Whiting ed. The Economics of Industrial Subsidies, London, HMSO, 1976, p. 145.

4/ The Government had offered cost-escalation insurance to shipbuilders, but stopped this program on June 30, 1980. Shipbuilders, however, still receive payments due to past commitments under this program. In addition, the shipbuilding industry seems to benefit from programs that also affect many other industries, such as export credit subsidies and public ownership of equity. These programs are discussed later in the report.

gross registered tons. 1/ Since 1979, to conform with its own policies and those of the EC, the Government has steadily decreased the size of the fund and the maximum available amount of aid per order. 2/ The home credit scheme offers U.K. purchasers of ships and mobile offshore installations credit terms comparable to those other countries' credit agencies offer on purchases from their yards and that the British Export Credit Guarantee Department (ECGD) offers buyers from other countries on purchases from British shipyards.

Exchange risk cover

The British Government will insure borrowers of foreign currency loans from EC institutions against losses caused by changes in exchange rates. This program started in January 1978 under an amendment to section 8. The institutions whose loans can be covered by this program are the European Investment Bank, the ECSC, and the New Community Instrument. The cost of these loans, including the cost of exchange risk cover, is about 3 percent below the cost of commercial loans denominated in British pounds. 3/ In fiscal 1982, the Government authorized 2.2 million pounds worth of these guarantees. 4/

Export credits

The United Kingdom helps finance exports with loan guarantees and low-interest loans through the Export Credit Guarantee Department (ECGD). ECGD loan guarantees cover 33 percent of British exports; its direct loans involve 5 percent of British exports. 5/

Export credit financing is targeted only if certain industries receive readier access to funds or better terms than other industries. The British shipbuilding and aircraft industries appear to receive better terms than those generally available. Various international agreements set the minimum terms of British export credit financing. For most industries, these terms are set by the OECD Arrangement on Guidelines for Officially Supported Export Credits. This arrangement exempts certain industries, however, including shipbuilding and aircraft. Export credits on ships are covered by the OECD Understanding on Export Credit for Ships. Export credits on large transport aircraft are governed by the Common Line Agreement between the United States and the Airbus consortium, and export credits on other aircraft are governed by the OECD Standstill Agreement. The Common Line Agreement allows financing terms that are about as favorable as those offered to most industries, but the Understanding on export credit for Ships and the Standstill Agreement allow terms that are much more favorable than those generally available. 6/

1/ Secretaries of State for Trade and Industry, Scotland, and Wales, op. cit., p. 12.

2/ U.S. Department of Transportation, op. cit., p. 151.

3/ Secretaries of State for Trade and Industry, Scotland, and Wales, op. cit., p. 45.

4/ Ibid. p. 5.

5/ OECD, The Export Credit Financing System, Paris 1982, p. 229.

6/ The agreements affecting export credits are discussed in Economic Impact of Foreign Export Credit Subsidies on Certain U.S. Industries: Report to the President on Investigation No. 332-144 . . ., USITC Publication 1340, January 1983, pp. 59-62 and 159-169. The OECD arrangement also does not cover nuclear power stations, agricultural goods, and military equipment.

Table 36.--Total Industrial Reorganization Corporation loans, 1967-72

Industry	Amount	Percent of total
	Million pounds	
Automobiles	34.0	32.1
Computers	18.0	17.0
Aircraft	10.0	9.4
Instruments	9.5	9.0
Bearings	9.4	8.9
Heavy engineering	7.0	6.6
Textiles	4.6	4.3
Paper	4.0	3.8
Shipbuilding	3.8	3.6
Machine tools	2.9	2.7
Nuclear energy	1.1	1.0
Steel	.9	.8
Mechanical engineering	.7	.7
Total	105.9	100.0

Source: Denton, op. cit, p. 133.

Industrial Reorganization Corporation

The Industrial Reorganization Corporation (IRC) was started in 1967 to provide loans to finance projects that it felt would improve industrial efficiency. The IRC put particular emphasis on encouraging mergers, because it felt that many British firms were too small to compete internationally. The distribution of IRC's loans is in table 36. Almost one-half of its loans went to the automobile and computer industries.

IRC's efforts apparently met with little success. 1/ The mergers it encouraged in the auto industry for Chrysler (United Kingdom) and British Leyland did not stop those firms from later needing substantial financial help from the Government. In the computer industry, an IRC-arranged merger created International Computers Ltd. (ICL) in 1968. Although ICL gained a significant share of the United Kingdom computer market, it needed substantial Government aid for years following the merger. 2/ The IRC encouraged the formation of the world's largest machine-tool manufacturer, Alfred Herbert, but that firm soon went bankrupt. 3/ The IRC did have some success in the bearing

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1/ Denton, op. cit., p. 132.

2/ By 1980, ICL had 35 percent of the United Kingdom computer market and significant exports. In 1973, however, the Government made a large loan to ICL. Furthermore, the Government was part owner of ICL until 1979. M. Davenport, "Industrial Policy in the United Kingdom," in F.G. Adams and L.R. Klein, eds. Industrial Policies for Growth and Competitiveness, Lexington, Mass., D.C. Heath & Co., 1983, p. 344. In 1981, the Government gave ICL a 200 million pound loan guarantee, Secretaries of State for Trade and Industry, Scotland, and Wales, op. cit., p. 6. ICL also has continuously received research and development grants.

3/ Anne Daly, "Government Support for Innovation in the British Machine Tool Industry: A Case Study," in Charles Carter, ed. Industrial Policy and Innovation, London, Heinemann, 1981, pp. 56 and 57.

industry. As a legacy of earlier cartel agreements, the British bearing manufacturers engaged in little price competition. Instead, these manufacturers competed by diversifying their products. As a result, they had extremely short production runs and high costs. Mergers in this industry led to longer production runs and lower costs. 1/ The bearing industry had shown a tendency to merge before the IRC acted, however, and efficiency-promoting mergers might have taken place even without the IRC. 2/ The Government terminated the IRC in the early 1970's.

Equity financing for innovative enterprises - the British Technology Group

The British Government has a number of programs that supply equity financing to innovative firms. These programs exist in large part because the Government believes that British capital markets do not provide enough financing for such firms. Two major organizations have provided Governmental equity financing for innovative firms: the National Enterprise Board (NEB) and the National Research Development Corporation (NRDC). Because the current activities of these two organizations are very similar, in 1981 they were joined under a common board to form the British Technology Group (BTG). The historical development of the NEB and NRDC, however, was very different.

The NEB started in 1975 with the announced purpose of joining the public sector's financial resources with the private sector's approach to making decisions. Until 1979, the NEB focused its efforts on four troubled companies that the Government turned over to it when it was created: British Leyland, Rolls Royce, Alfred Herbert, and Cambridge Instruments. Of the 777 million pounds' worth of public funds that the NEB spent up to March 1979, 699 million was spent on those four companies, including 569 million pounds on British Leyland and 95 million pounds on Rolls Royce. The NEB tried to develop a strategy that involved picking sectors to concentrate its efforts on the basis of an assessment of future demand for their products and their profitability. The NEB chose aircraft engines and automobiles, which it had to choose due to its ownership of Rolls Royce and British Leyland. The NEB also chose computers and electronics, machine tools, scientific and medical instruments, office equipment, process control, telecommunications, power plant manufacture, construction and mechanical handling equipment, industrial engines, hydraulics, electronic test and measuring instruments, and offshore engineering. 3/

The Conservative government changed the direction of the NEB. The NEB was originally established to further public ownership of industry, but now is expected to encourage private ownership. The NEB now will sell its share of a private business once that business becomes viable. Such a sale may not be delayed solely to improve NEB's financial performance. The Conservative government reduced NEB's borrowing authority and had it sell a number of its holdings.

1/ F.M. Scherer, et al., The Economics of Multi-Plant Operation, Cambridge, Mass, Harvard University Press, 1975, pp. 312 and 313.

2/ Peter Kolk, "United Kingdom," National Support for Science and Technology, in Center for Policy Alternatives, Massachusetts Institute for Technology, vol. 2, 1976, p. 43.

3/ Ibid., p. 109.

The Conservative government also has shifted NEB's emphasis from troubled firms to high-technology sectors. The NEB transferred British Leyland and Rolls Royce to the Department of Trade and Industry; it sold Cambridge Instruments and the residual assets resulting from the collapse of Alfred Herbert. On December 31, 1982, NEB valued its total investments in industry at 141.6 million pounds, or $228.0 million. Of that value, 64.5 percent was in five firms: 35.4 percent was in Inmos, a manufacturer of integrated circuits; 10.8 percent was in Data Recording Instrument Co. Ltd., a manufacturer of computer peripherals, 7.7 percent was in Wholesale Vehicle Finance Ltd., a firm providing financing for British Leyland distributors; 5.5 percent was in British Underwater Engineering, a supplier of underwater services, vessels, design engineering, and manufactured products to the offshore oil industry; 5.1 percent was in Monotype Holdings, a maker of typesetting equipment including computerized laser-based systems. 1/

Under both the Conservative and Labor governments, one goal of NEB has been to encourage investment in depressed regions. As of September 30, 1983, 3.5 percent of the value of NEB's equity holdings was in investments undertaken to help depressed regions. The British Technology Group (BTG) will continue NEB's policy of helping these regions. BTG plans to invest 20 million pounds specifically in projects in depressed areas from 1982 to 1985. 2/

Throughout its history NEB has fallen short of the financial criteria established by the Government. Before the Thatcher government took power, NEB was required to make a rate of return of from 15 to 20 percent, excluding the operations of British Leyland and Rolls Royce. This target was based on the NEB's forecast that large manufacturing firms would achieve a 20-percent rate of return. From 1976 to 1980, NEB's average rate of return, excluding British Leyland and Rolls-Royce, was 4.8 percent. 3/

In 1981, the Thatcher government changed the financial criteria for NEB. The NEB's financial performance now is measured by two criteria: the return on the sale of investments, and the level of operating profits. These criteria correspond to the two components of the return that private investors realize on their equity: capital gains and corporate earnings. Under the first criterion, the NEB must determine the change in the market value of the investments being sold and compare that change to the capital gains realized on privately held equity. 4/ In both 1981 and 1982, the increase in the value of NEB's salable assets was less than the capital gains realized by private investors. The difference between the NEB's income from sales of its investment and the income it would have realized had it realized the same capital gains as private investors was 50.2 million pounds in 1981 and 5 million pounds in 1982. Under the second criterion, the NEB must determine its rate of return on Government funds and its operating profit as a share of its borrowings from the Government, and compare that return to the interest

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1/ Data on investments are from National Enterprise Board, "Annual Report and Accounts 1982," 1983, pp. 38-45.

2/ British Business, March 19, 1982, p. 532.

3/ The highest annual rate of return NEB realized during this period was 11.8 percent in 1976. Wyn Grant, op. cit., pp. 105-108, and National Enterprise Board, "Annual Report and Accounts 1980," 1981, p. 5.

4/ The Financial Times Actuaries Share Index is used to measure the capital gains on privately held equity. The ratio of sales price to the acquisition cost is used to measure the change in the market value of the NEB's assets.

rate paid on United Kingdom Government bonds. 1/ The NEB's rate of return has been lower than the interest rate on Government bonds. If the NEB had realized the same rate of return on its borrowings as private investors realized on the funds they lent the Government, then NEB's profit would have been 80.6 million pounds higher in 1981 and 13.4 million pounds higher in 1982. Although 2 years is too short a time period to provide a definitive indication of the financial results of a holding company engaged in innovative enterprises, the NEB apparently has fallen far short of the Government's new financial criteria and has realized a much lower return on investment than that received by private investors.

Investment by the NEB is a small share of total investment in the British economy. Except for the years when it invested heavily in British Leyland, NEB's investment was never more than 0.2 percent of gross fixed capital formation in the United Kingdom (table 37).

Table 37.--Investments by the National Enterprise Board as a share of United Kingdom Gross Fixed Capital Formation, 1976-82

Year	Purchases of fixed assets	Other investments	Total investments	
			Amount	Share of gross fixed capital formation
	Million pounds			Percent
1976	0.65	51.92	52.57	0.2
1977	.06	30.56	30.62	.1
1978	.04	2/ 507.74	507.78	1.7
1979	.04	2/ 247.52	247.56	.7
1980	0	2/ 489.25	489.25	1.2
1981	.06	52.76	52.82	.1
1982	.02	12.04	12.06	3/

1/ Data are for gross investments unadjusted for asset sales or depreciation.

2/ Investments in 1978, 1979, and 1980 include large purchases of British Leyland's equity. These purchases totaled 449.03 million pounds in 1978, 149.43 million pounds in 1979, and 439.24 million pounds in 1980.

3/ Less than .05 percent.

Source: National Enterprise Board, except the data in the last column, which were calculated by the staff of the U.S. International Trade Commission using official statistics of the International Monetary Fund.

1/ The use of the Government bond rate in this comparison probably understates the difference between the NEB's earnings and those of private equity holders. Because private equity generally is a riskier investment than government bonds, it usually bears a higher rate of return. The earnings on equity do sometimes provide a lower rate of return than the interest earned on bonds because equity holders expect capital gains. As noted, however, the NEB's capital gains recently have been low relative to those on private equity.

The National Research Development Corporation (NRDC) started in 1949 as a public corporation. Its purpose is to insure that private firms can exploit the results of public sector research. The NRDC also tries to find licensees for public sector patents; it once had the right of first refusal on many patents of Government research laboratories and universities, but it no longer has that right. The NRDC sometimes acquires patents from private inventors, but it encourages those inventors to contact industry on their own. Table 38 shows that most of NRDC's patent rights come from universities. In fiscal 1982, the NRDC received 25.19 million pounds in income from patent licenses. (The NRDC is willing to license its patents to foreign firms.)

One method the NRDC uses to encourage the exploitation of inventions is to enter into joint ventures with the private sector. The NRDC's investments in these projects was 12.8 million pounds in fiscal 1980, 11.7 million pounds in fiscal 1981 and 12.0 million pounds in fiscal 1982. 1/ Thus, except for 1982 the NRDC's investments in industry have been substantially less than those of the NEB.

The British Technology Group (BTG) also has programs geared towards helping small businesses. The BTG's small companies division has two major programs: Oakwood Loan Finance Ltd., and the Small Companies Innovation Fund (SCIF). Oakwood, a subsidiary of the NEB, gives small companies loans of up to 50,000 pounds at below market interest rates with no principal payments for the first three years of the loan. When it makes a loan, Oakwood usually buys a warrant entitling it to purchase up to 20 percent of the equity of the borrowing firm. SCIF, which the NRDC started, concentrates on innovative firms. SCIF gives a wider variety of financial aid than Oakwood and often makes equity investments.

Table 38.--Sources of patent rights assigned to the NRDC, 1980-82 1/

(Number of patents)

Source	1980	1981	1982
Universities	84	143	109
Government	98	64	48
Industrial research associations	7	6	1
Charities	3	0	0
Firms	5	3	6
Private individuals	9	13	8
Total	206	229	172

1/ Data are on a fiscal-year basis. The United Kingdom fiscal year starts on Apr. 1.

Source: NRDC.

1/ These data exclude purchases of fixed assets and include NRDC's investments in a leasing subsidiary. NRDC's investments combined with those of NEB were less than 1 percent of British gross fixed-capital formation in 1982. Data are not strictly comparable, however, because NRDC data are on a fiscal-year basis.

Nationalized industries

Besides the holdings of the BTG, which now are concentrated in high-technology industries, the British Government owns large parts of certain other industries. National ownership in an industry sometimes confers financial benefits. The state sometimes provides equity funding at lower costs than private investors. Furthermore, if creditors perceive state-owned businesses as less risky than private firms, they will be willing to lend money to state-owned businesses at lower interest rates than those private firms pay. National ownership, however, can also have serious disadvantages. State-owned firms sometimes find that to satisfy various Governmental goals, they must alter business plans in ways that reduce profits and growth. In the United Kingdom, the Government on several occasions has interfered with nationalized industries in an attempt to fight inflation or to maintain employment. 1/ Therefore, national ownership does not always work to increase an industry's competitiveness.

The extent of the British Government's ownership of industry is large compared with that of the U.S. Government. Besides the NEB's holdings, the British Government now owns all or most of the telecommunications system and the airline, steel, coal, automobile, and shipbuilding industries. The present Government's policy, however, is to reduce its ownership of industry. Since 1979 the Thatcher government has sold 2 billion pounds' worth of its equity holdings. 2/ The Government is planning to sell more of its holdings, including a controlling share of the telecommunications network, British Telecom, and the largest airline, British Airways.

When disposing of its equity, the Government sometimes sells only a controlling share of the firm. For example, it retains a 48-percent share of British Aerospace, the largest British aircraft manufacturer. In these cases, however, the Government's policy is to insist on the same returns as the private shareholders receive and not to interfere with the company's management unless necessary to protect the Government's investment.

The major role of nationalized firms in British targeting has been to serve as a conduit for Government funds to depressed industries. The Government has given equity capital to nationalized firms, such as British Steel and British Leyland, whose poor financial performance made it extremely unlikely that they would attract private capital.

1/ B. Chiplin and M. Wright, "Competition Policy and State Enterprises in the United Kingdom," Antitrust Bulletin, winter 1982, p. 925. An example of how state ownership can harm an industry is British Steel. In the late 1960's and early 1970's bureaucratic inertia and political disputes over plant closings caused serious delays in that firm's investment program. Furthermore, political considerations forced British Steel to spread its investment too thinly rather than concentrating it in a few locations where it could do the most good. In some cases, British Steel invested substantial sums in modernizing mills that closed within a few years. E. Cottrell, The Giant With Feet of Clay, London, Center for Policy Studies, 1981, pp. 53-55, and 147.

2/ Economist, Jan. 7, 1984, p. 43.

Science and Technology

The British Government funds research and development and tries to make technological information more readily available to firms. Much of the British Government's science and technology activities are not targeted. Funding of R&D projects that lower costs or that improve products may increase an industry's competitiveness, particularly because private firms retain the rights to any patents that result from Government-supported research that they do. The large majority of Government research funds, however, are not directly aimed at improving industrial competitiveness. Furthermore, those funds that are directed to industry often are equally available to all sectors. New-technology industries naturally will benefit more from programs to encourage research and disseminate technological information than other industries, but these programs' benefits are still too broadly focused for them to constitute targeting as defined in this report.

Some of the British Government's science and technology programs, however, seem to target specific sectors. For example, the Government has directed a number of special programs towards specific technologies. 1/ Furthermore, the Government has funded a substantially larger share of R&D for the aerospace and electronics industries than it has for all manufacturing.

The composition of research and development expenditures

In 1981, the Government spent 3,316 million pounds to finance research and development. Table 39 shows the objectives of these expenditures. In 1982, the two objectives receiving the largest share of funding were defense (52.2 percent) and the general promotion of knowledge (23.7 percent). Seven percent of these funds went to improve industrial productivity and technology.

Table 39.--The composition of United Kingdom Government expenditure on research and development, by objectives, 1980-82

(Percent of total)

Objective	1980	1981	1982
Exploring and exploiting the earth and its atmosphere	.9	.7	.6
Environment	1.7	1.3	1.3
Health	2.5	2.2	2.2
Energy	6.7	6.5	6.2
Agriculture	4.1	3.9	3.9
Industrial productivity and technology	6.2	7.7	7.0
Social problems	1.1	1.0	1.1
Space	2.1	2.0	1.7
Defense	54.2	52.0	52.2
General promotion of knowledge	20.5	22.4	23.7

Source: Official statistics of the EC Statistical Office.

1/ Much of the activities under these programs are designed to increase awareness of the technologies involved in a broad spectrum of user industries, and this aspect of these programs apparently is not targeted.

Government's share of the financing of industrial R&D expenditure varies widely between sectors. Table 40 shows that the United Kingdom Government finances a much larger share of the R&D of the aerospace and electronics industry than of other industries. In 1981, the Government financed 68 percent of the aerospace industry's R&D, 50 percent of the electronics industry's R&D, and 34 percent of all manufacturing's R&D.

Table 40.--Share of United Kingdom Government financing of industrial R&D expenditures, by sectors, 1969-81

(In percent)

	1969	1972	1975	1978	1981
All manufacturing	34	37	34	32	34
Chemicals	2	1	3	1/	1
Mechanical engineering	16	9	7	6	13
Electronics	39	46	52	53	50
Other electrical engineering	6	17	15	18	22
Motor vehicles	1/	1	1	4	1
Aerospace	92	85	82	72	68
Other	6	8	6	5	7

1/ Less than 0.5 percent.

Source: Official statistics of the United Kingdom Department of Trade and Industry.

Department of Trade and Industry

The Department of Trade and Industry (DTI), which spent about 8 percent of the Government's research budget in fiscal 1982, provides most of the Government's support for industrial research and development. Industry carried out most DTI-funded R&D, 54.9 percent in fiscal 1982 (table 41). DTI's own research laboratories carried out 24.2 percent of this R&D. The DTI

Table 41.--Research, development, and innovation expenditures of the United Kingdom Department of Trade and Industry, by organization performing the work, 1982 1/

Organization	Expenditures	
	Thousand pounds	Percent of total
Industry 2/	147,450	54.9
DTI research laboratories 3/	64,940	24.2
Other Government departments	23,864	8.9
Research Associations	17,684	6.6
U.K. Atomic Energy Association	5,982	2.2
Natural Enviromental Research Council	1,382	.5
Universities	1,403	.5
Other	5,923	2.2
Total	268,628	100.0

1/ U.K. fiscal year.
2/Includes nationalized firms.
3/ Includes expenditures at the National Maritime Institute up to September 30, 1982. Control of this institute was transferred to the private sector in October of 1982.

Source: Official statistics of the U.K. Department of Trade and Industry.

currently has four research laboratories; it had six at the start of fiscal 1982, but the National Maritime Institute was transferred to the private sector on October 1, 1982, and the Computer Aided Design Center was transferred to the private sector on April 1, 1983. These laboratories do

research for Government departments besides the DTI and for private industry, as the following tabulation shows (in percent):

Source of funds for DTI research laboratories in fiscal 1982

	Share
DTI	52
Other Government	23
Industry	17
Advisory services	9

Firms retain rights to patents that result from DTI-supported research that they do. If a firm has not exploited the results of a DTI-supported research project within 3 years of completion, however, the Government has the right to use the results. (Exploitation may include using the results in further research.) DTI laboratories usually assign patent rights to the NRDC.

Table 42 shows the distribution of DTI's R&D expenditures, by areas, of application. Space technology receives the largest share of these funds, 23.0 percent, followed by electronics and information technology, 21.7 percent, mechanical and electrical engineering, 13.1 percent, and civil aircraft, 11.6 percent.

Table 42.--Research, development, and innovation expenditures of the United Kingdom Department of Trade and Industry, by sectors, 1982 1/

Area	Sector	Expenditures	
		Amount	Percent of total
		1,000 pounds	
Electronics and information technology.		58,332	21.7
	Computing, Communications, consumer and capital electronics.	27,216	10.1
	Instrumentation and control.	12,194	4.5
	Electronic components and devices.	11,474	4.3
	Information technology awareness.	3,660	1.4
	Other 2/	3,788	1.4
Space technology		61,910	23.0
Civil aircraft		31,248	11.6
	Aircraft engines	15,335	5.7
	Airframes	7,468	2.8
	Avionics	5,990	2.2
	Other equipment	52	6/
	Other 3/	2,403	.9
Mechanical and electrical engineering.		35,252	13.1
	Advanced manufacturing technology.	8,015	3.0
	Hydraulics machinery, and standards.	7,956	3.0
	Maritime technology	4,501	1.7
	Electrical technology	1,642	.6
	Engines and vehicles	8,674	3.2
	Process plant	3,632	1.4
	Other 4/	832	.3

Table 42.--Research, development, and innovation expenditures of the United Kingdom Department of Trade and Industry, by sectors, 1982 1/--Continued

Area	Sector	Expenditures: Amount	Expenditures: Percent of total
		1,000 pounds	
Materials and chemicals.		18,294	6.8
	Chemical manufacture and biotechnology.	2,187	.8
	Polymers and ceramics	3,502	1.3
	Ferrous metals	6,061	2.3
	Nonferrous metals	1,391	.5
	Minerals, metals extraction, and reclamation.	2,783	1.0
	Other 5/	2,370	.9
Textiles and other manufactures.		3,668	1.4
	Spinning	464	.2
	Weaving	13	6/
	Wet-processing	219	.1
	Knitting	61	6/
	Clothing	194	.1
	Carpets	165	.1
	Leather	234	.1
	Footwear	521	.2
	Nonwovens	74	6/
	Other textiles	504	.2
	Paper and board	356	.1
	Printing	195	.1
	Packaging	207	.1
	Furniture	312	.1
	Miscellaneous	149	.1
Metrology and standards.		17,107	6.4
Energy efficiency		1,551	.6
Technology transfer		18,373	6.8
Research establishments technical services.		22,893	8.5
Total		268,628	100.0

1/ United Kingdom fiscal year.
2/ Funding for surveys and studies in this area.
3/ SFI project support to various industries.
4/ Payments under sec. 8 sectoral schemes. These schemes have closed to applications.
5/ Research on mineral reconnaissance, intelligence, and exploration.
6/ Less than 0.05 percent.

Source: Official statistics of the United Kingdom Department of Trade and Industry.

Support for innovation

DTI's funding of research and development by industry is done through the Support for Innovation (SFI) program. Five types of aid are available under SFI: product and process development, longer term R&D, market studies, production launch, and preproduction orders. For a firm to qualify for one of these types of aid, it must satisfy three conditions: it must do the funded research and be able to manufacture any resulting products in the United Kingdom, the DTI must believe that the project will lead to a new or significantly improved product or process, and Government aid must be needed for the project to go ahead as proposed. Costs qualifying for aid under SFI are net of any other Government aid, including regional development grants and EC aid. Product and process development aid generally is a grant of one-third of the project costs; sometimes this aid is a cost-sharing contract. 1/ Under cost-sharing contracts, the Government pays one-half of project costs but shares in sales revenues that result from the project. Longer term R&D aid has the same form as product and process development aid, but cost-sharing contracts are more common in this case. The DTI only gives long-term R&D aid if the applicant shows ". . . that a clear route to the ultimate market place is available . . ." 2/ Aid for market studies also is a grant for up to one-third of costs. Production launch aid is a grant of up to one-fifth of the cost of starting full scale production. Under preproduction orders, the DTI buys a new product and then allows potential purchasers to use it for a trial period. DTI usually buys no more than four models, and the trial period is usually less than 1 year. If the product performs satisfactorily, DTI expects the user to buy it at the end of the trial period. Otherwise, DTI sells the product back to the user, but DTI might take a loss on the resale.

Although SFI aid is available to all industries, the DTI has special schemes for SFI assistance to various areas. Table 43 lists such schemes. A major purpose of these programs is to increase awareness of the technologies involved, so these schemes often include seminars, demonstration projects, and

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1/ In May 1982, when a number of R&D support programs were merged to form SFI, the maximum grant was increased; it had been one-quarter of project costs.
2/ DTI, "Support for Innovation," London, August 1983.

Table 43.--Special schemes to encourage new technology under the United Kingdom DTI Support for Innovation Program announced before September 1983 1/

Products of technology involved	What the scheme was designed to encourage	Allocation
		Million pounds
Information technology	Collaborative research (Alvey program).	200
Information technology	Awareness and development and production of new products and processes.	80
Microelectronics Application Project.	Application in manufacturing	85
Biotechnology	Development and application	16
Computer-Aided Design and Manufacture.	Application in manufacturing	16
Computer Aided Design Manufacture and Test.	Application in electronics	9
Computer Aided Design and Test Equipment.	Capital equipment purchases	2/ 12
Flexible Manufacturing Systems.	Introduction of these systems	2/ 35
Fiber Optics and Optoelectronics.	Design, development, launch and application.	2/ 58
Microelectronics industry support program.	Research, investment, and production launch.	85
		2/ 55
Robots	Development and application	2/ 10
Software	Development and marketing	25
Quality assurance	Awareness and implementation of programs to assure quality.	2/ 13

Table 43.--Special schemes to encourage new technology under the United Kingdom DTI Support for Innovation Program announced before September 1983 1/--Continued

Products of technology involved	What the scheme was designed to encourage	Allocation
		Million pounds
Telecommunications------------	Development and manufacture--------	3/

1/ Not all these schemes were still open to applications in September of 1983. Disbursement of funds under these programs usually takes place over several years.

2/ This sum includes funding under sec. 8 of the Industrial Development Act.

3/ This scheme is aimed at small- and medium-sized firms and is limited to products that can be attached to public telecommunications networks. Data on funds allocated to this project are unavailable.

Source: United Kingdom Department of Trade and Industry.

short training courses. These schemes also often include funding for feasibility studies, which is not usually available under STI. Funding for research projects under these schemes is available under the same conditions applicable to all aid under SFI, and DTI officials state that the existence of a special scheme for an area would not make projects in that area more likely to receive funding. A number of these special schemes involve aid under section 8 of the Industry Development Act. (See the "Financial Assistance" section.)

The Alvey program, the first scheme listed in table 43, differs from the others in its emphasis on collaborative research. The Alvey program, which was recommended in October 1982 by a committee chaired by John Alvey, calls for a research program in four areas related to information technology: Very Large Scale Integration (VLSI), software, man-machine interfaces, and intelligent knowledge-based systems. Each research project under this program will involve at least two research institutions. 1/ One of the main objectives of the Alvey program is to encourage cooperation among researchers. The Alvey program calls for an academic research effort costing 50 million pounds and an industry research effort costing 300 million pounds. The Government will pay for all the academic research and one-half of the industry research. 2/ This money will be spent over a 5-year period. The

1/ Brian Oakley, director of the Alvey program, has indicated that U.S. firms may participate if they are in a consortium consisting largely of British firms. James Fallon, "Major U.K. Firms Gear for $300 million Collaborative R&D Program," Electronic News, Nov. 28, 1983, p. 66.

2/ Government funds for the Alvey program will come from the DTI, the Department of Education and Science, and the Ministry of Defense.

distribution of Government expenditures over the four areas is not certain, but very large scale integration will probably receive the largest share, about 30 percent, and software engineering will receive about 20 percent. 1/ The Government is willing to fund a larger portion of industry research under this program than it usually does, because Alvey program research is further from application than most SFI funded research.

Disseminating information

The DTI has a number of programs that improve industry's access to technological information. DTI has several programs that give free consulting, including the Manufacturing Advisory Service, which provides firms of from 60 to 1,000 employees with 15 days of free consulting; the Design Advisory Service, which gives small- and medium-sized businesses free consulting on product design; the Small Firms Technical Enquiry Service, which gives 5 days of free consulting to firms with fewer than 200 employees; and the Quality Assurance Advisory Service, which gives free advice to firms that have fewer than 1,000 workers and that are considering starting a quality management system. The DTI also has conferences, courses, seminars and exhibitions. Its laboratories sponsor many of these activities and also have advisory services. In fiscal 1982, DTI spent 18.4 million pounds on technology transfer. Many activities of the National Research Development Corporation (NRDC) also help disseminate information. The NRDC is described in the "Financial Assistance" section.

Cartel and Merger Policy

The United Kingdom generally has not used antitrust policy to target specific industries. In the late 1960's, the Government actively promoted mergers in a number of sectors, but, in the early-1970's, the Government ended this policy and tightened the restrictions on mergers.

Cartel policy

With a few exceptions, any agreement between two businesses that restricts the decisions of more than one party concerning the prices it charges, quotes, or pays, the goods that it processes or the services it supplies must be registered. Unless the Director General of Fair Trading (DGFT) decides that the restriction is insignificant, he must refer it to the Restrictive Practices Court (RPC). If the parties cannot prove that their agreement is in the national interest, the RPC will outlaw the agreement. In 1980, there were 495 registered agreements involving services and 3,873 involving goods. 2/ The great majority of these agreements were not referred to the RPC.

1/ Ibid., p. 23.
2/ OECD, "Annual Reports on Competition Policy," Paris 1981, No. 2, p. 77.

There are a few exceptions to the law requiring agreement registrations. Professional services, finance, transportation, and insurance are exempt. Export cartels that have no effect on commerce within the United Kingdom need not be registered. The Secretary of State for Trade and Industry may exempt industry agreements to reduce capacity from registration, but such exemptions are not automatic. The DTI usually reviews the capacity reductions that result from these schemes. 1/ There is no evidence that these agreements maintain or increase the capacity of the industries involved. In fact, the producers may try to increase prices by lowering capacity below the level that would exist without an agreement. In that case, the agreement could reduce the industry's capacity.

The Secretary of State for Trade and Industry also may exempt any agreements that he feels are of substantial importance to the national interest. This power has only been used to exempt three agreements: a joint venture to develop a new switching device, an agreement to combine and to scrap certain facilities among small research groups in genetics, and a joint operating agreement among paper mills.

Joint research and development agreements generally would not be challenged under U.K. antitrust law. Such an agreement might be challenged if it were extremely restrictive and if there were few competitors in the industry who were not involved in the agreement. If the agreement extended to production, that would make a challenge more likely.

Merger Policy

The DGFT is responsible for advising the Secretary of State for Trade and Industry to refer mergers to the Merger and Monopolies Commission (MMC). Mergers usually are referred to the MMC if the merging companies have a combined market share of over 25 percent or gross assets of the acquired firm exceed 5 million pounds. The MMC must then determine if the merger is against the public interest. In this determination, the MMC must consider the merger's effects on competition, consumer interests, costs, innovation, the distribution of industry and employment in the United Kingdom, and exports. After the MMC makes its determination, the Secretary of State decides whether or not to stop the merger.

1/ Only two such agreements currently exist; they involve private-sector steel producers and steel castings producers. As noted earlier in the report, the Government aids industries that engage in such schemes by allowing firms to deduct payments to funds that pay members' closing costs from taxable income. Furthermore, the Government may contribute to that fund itself.

Before 1972, United Kingdom merger policy was more permissive; in particular, the guidelines for referring market shares for investigating mergers were lower. Furthermore, the Government often actively encouraged mergers. (See the discussion of the IRC in the "Financial Assistance" section.) In some cases, such as British Motor Holdings-Leyland, this encouragement included a statement that the Secretary of State probably would not refer the merger to the MMC. 1/ Given the generally permissive merger law at that time, however, these mergers may not have needed antitrust exemptions. The DGFT continues to offer any firms contemplating mergers confidential guidance on whether he is likely to refer the merger to the MMC.

1/ Peter Kolk, op. cit., p. 58.

TARGETING TECHNIQUES FOR SPECIFIC INDUSTRIES

Aircraft and Aerospace

Airbus Industrie

The Airbus Industrie consortium was established in 1970 to combine the resources of major European aircraft manufacturers into an organization capable of producing high-capacity short/medium range aircraft. 1/ Members of the consortium are Aerospatiale (France) with a 37.9-percent interest, Deutsche Airbus (West Germany), with 37.9 percent, British Aerospace (United Kingdom), with 20 percent, and Construcciones Aeronautics SA (CASA) of Spain, with 4.2 percent. 2/ With the exception of West Germany, Federal Government ownership of the companies which make up Airbus Industrie is high: the French Government owns over 97 percent of Aerospatiale, the British Government owns 48.43 percent of British Aerospace, and CASA is wholly owned by the Spanish Government. 3/ Deutsche Airbus is a subsidiary of Messerschmitt Boelkow-Blohm (MBB), which is 43.8 percent publicly owned. Fokker (the Netherlands) and Belairbus (Belgium) are not members of the consortium, but they do participate in Airbus project development and act as subcontractors.

Each participant in Airbus projects does an agreed upon share of research and development. These costs are subsidized by the French, West German, and British Governments, primarily through low- or no-interest loans with repayment conditioned upon the commercial success of the product. These subsidies appear to be a major factor in Airbus' ability to continue production despite little return on its investment. The consortium's uniting of financial and technical resources has resulted in aircraft that are technically and competitively viable.

France

The French Government uses direct ownership as the primary mechanism to control and promote the growth of its commercial aircraft industry. The Government has nationalized companies to consolidate the industry and improve its efficiency.

Most French manufacturers of aircraft engines were nationalized after World War II and merged into the Societe National d' Etudes et de Construction de Moteurs d' Avions. The nationalization and merging of commercial airframe manufacturers also began after the Second World War and continued until the Societe National des Industries Aerospatiale (Aerospatiale), the only commercial airframe manufacturer in France today, was established in 1970.

1/ This is potentially a lucrative market, because about 60 percent of domestic flights are on routes of less than 4600 kilometers Airbus Industrie, Briefing.

2/ Ibid.

3/ Ibid.

Discriminatory Government procurement is another mechanism used by the French Government to encourage the aircraft industry. Private procurers, particularly those who have received Federal assistance, are also encouraged to purchase French products. Foreign manufacturers have only limited access to the French market because of this "Buy French" policy. 1/

The French Government also assists the aircraft industry by actively encouraging joint international ventures. These joint ventures are intended to facilitate the exchange of technology and reduce the risks of new projects by improving access to foreign markets, but they have not always been successful in this regard. The Anglo-French Concorde Project, for example, produced commercially unsuccessful though technically superior aircraft. The financial losses of the project continue to be shared between the partner countries.

The French Government has assisted technological development in the aircraft industry by providing the large amounts of capital necessary to develop, produce, and market new aircraft. The bulk of financial assistance to the aerospace industry in the past has been allocated to the Concorde. By 1979, the Concorde had received about 18.6 billion francs ($4.4 billion). Currently, the majority of French industrial aid for aerospace is scheduled for the Airbus program. The Transportation Ministry budget allocated $405 million for civil aviation programs in 1983; of that $31.8 million is for a commuter aircraft developed by Aerospatiale. 2/

West Germany

West Germany began encouraging its aerospace industry over a decade ago to maintain its technological and commercial competitiveness. The primary mechanism used by the Federal Government to assist the industry is rationalization through mergers. In 1980, the West German Government initiated the merger of MBB and VFW to accelerate rationalization, to strengthen the competitive position of the companies, and to help strengthen the structure of the industry. 3/

West Germany also encourages the aerospace industry through support for research and development. This aid is particularly vital to domestic producers because, relative to other countries, German aerospace manufacturers are small and cannot pursue capital-intensive or high-risk ventures without Government assistance. Research and development aid is generally in the form of "repayable contributions," and is contingent upon the industry providing

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1/ U.S. Department of Commerce, Country Marketing Plan: France - Fiscal year 1984, p. 1.

2/ This aircraft is being developed jointly with an Italian Government owned aircraft producer, Aeritalia.

3/ Economic Impact of Foreign Export Credit Subsidies on Certain U.S. Industries: Report to the President on Investigation No. 332-144 . . ., USITC Publication 1340, January 1983, p. 199.

40 percent of the cost of a project. 1/ From 1962 to 1983, the West German Government provided 3.7 million deutschemarks in subsidies to civil aircraft. 2/

West Germany's support for the Airbus A300 and A310 models consisted of 2.4 billion deutschemarks for development funding; loan guarantees of 4.5 billion deutschemarks to enable Deutsche Airbus to raise capital; production funding of DM 642 million; and the allocation of DM 4 billion for sales assistance in the form of interest rate subsidies. Most of the sales assistance money has not been spent. Repayment of the production funding, which was to be through royalties on Airbus sales, has been deferred to 1994 or later due to poor commercial performance. An additional deutschemarks 12 billion was allocated in 1983 for the development of the new A-320 model, also to be repaid on a royalty basis. 3/ Other West German support programs are relatively small compared with Airbus assistance, but they include project development aid and loan guarantees.

The United Kingdom

One method the British Government has used to encourage its aerospace industry is through nationalization of firms to accelerate rationalization. Short Brothers, manufacturers of small commuter and transport aircraft, is now wholly owned by the British Government. British Aerospace (BA), the result of merging several companies in 1977, is 48.43 percent owned by the British Government, 48.43 percent owned by private shareholders, and 3.14 percent employee owned. 4/

The provision of launch aid is another mechanism used by the Federal Government to encourage the aerospace industry. Launch aid is the partial funding (up to 50 percent) of development costs of viable aircraft projects which the private sector will not fund on its own. From 1945 through 1976, about 700 million pounds in launch aid had been given to civil aerospace. 5/

British Aerospace was legally banned from receiving launch aid while it was 100 percent state owned. In 1982, the British Government sold 52 percent of its BA stock and announced it might further reduce its holdings to 25 percent. Recent projects which have received launch aid are the W30 helicopter and the RB-211 engine for the Boeing 757 aircraft.

In early 1984, the United Kingdom signed an agreement with Italy to jointly produce the EH-101 helicopter for military and civilian use. 6/

1/ Ibid., p. 191.

2/ Federal Republic of Germany, Ministry of France, "Ninth Subsidy Report," p. 135.

3/ European Report, Nov. 30, 1983, p. 2. The A320 is a 150 to 164 seat-airplane that Airbus plans to introduce in 1987 or 1988.

4/ Economic Impact of Foreign Export Subsidies on Certain U.S. Industries: Report to the President on Investigation No. 332-144 . . . ., USITC Publication 1340, January 1983, p. 191.

5/ N.K. Gardner, "Economics of Launching Aid," in Alan Whiting, ed., The Economics of Industrial Subsidies, London, HMSO, 1976, p. 146.

6/ Roger Cohen, "Britain, Italy Sign Accord to Produce EH-101 Helicopter," Wall Street Journal, Jan. 26, 1984, p. 37.

Westland Aircraft Ltd. of the United Kingdom and Construzioni Aeronautiche Giovanni Augusta SPA of Italy will manufacture the aircraft. The British Government has pledged $82 million in launch aid for the venture and Italywill contribute $74.2 million in launch aid. 1/ Money for the project will come from each Government's defense fund and the firms' resources. The United Kingdom and Italy have agreed to purchase 60 each of the helicopter. 2/

The United Kingdom also provides direct funding for various aircraft and engine projects for Airbus Industries. The United Kingdom Government recently promised British Aerospace 250 million pounds, or $372.5 million, in launch aid for its share of the proposed A320 model aircraft.

Automobiles and Trucks

France

The French Government has recently established The Fund for Industrial Modernization (FIM) that will make low-cost loans available to all industries. The major auto manufacturers in France, Renault and PSA (Peugeot-Citroen-Talbot), will receive 14 percent of the initial outlay of these funds. Renault is scheduled to receive 750 million francs of FIM's 1984 budget allocation of 9 billion; PSA is scheduled to receive 550 million francs. (PSA is a private company; Renault is wholly owned by the French Government).

The FIM fund is part of the Government's efforts to increase long-term investment in French industry. Aid is financed through tax-free savings deposits in France's nationalized banking system. 3/ The total budget for the fund is 3 billion francs for 1983 and 9 billion francs by 1984. 4/ Firms will be allowed to borrow at a rate of 9.75 percent for up to 10 years. 5/ PSA and Renault will use the funds to upgrade their factories with robots and automated assembly line techniques.

France has also intervened to protect its automobile industry from Japanese imports. Japan has "agreed to voluntarily limit" imports to 3 percent of the French national market. To reinforce this agreement, the Government of France has erected administrative barriers to hold Japanese imports to the agreed upon limit. 6/

1/ Ibid.
2/ After development of the prototype, full-scale production is scheduled to begin in 1989. Ibid.
3/ Ibid.
4/ Ibid.
5/ Ibid.
6/ European Report, July 23, 1980, p. 3.

West Germany

Although the West German Government has not intervened in structural changes in the automobile industry, it has protected its home market. In 1980, Germany reportedly arrived at an agreement with Japan for voluntary restraints of imports to 10 percent of the national market. 1/ Although financial assistance has been provided to Volkswagen and BMW during periods of slow sales, Government assistance to the automobile industry generally has been confined to generously funding research programs. 2/

Italy

The Government of Italy has taken steps to protect its automobile market from foreign competition. Italy has a strict pre-Treaty of Rome agreement with Japan that limits Japanese imports to 2,200 cars per year. 3/ The Government has also been formulating a restructuring plan for the industry since 1981. 4/ In 1980, the Italian Government approved a joint venture between state-owned Alfa Romeo and Nissan (Japan) to produce 60,000 small cars annually in southern Italy. 5/ Production is scheduled to begin in 1984.

United Kingdom

The British Government has a moderately protectionist position with regard to its automobile industry. The Government has reached a "gentleman's agreement" with Japan, which limits Japanese imports to 11 percent of the national market. 6/ In addition, the British Government has supported plans to restructure the industry and has traditionally intervened when firms were in financial difficulty. 7/ British-Leyland has particularly benefited from state aid. From 1976 through 1981, the Government gave 1.9 billion pounds in equity and loans to British Leyland. 8/

1/ The Labor-Industry Coalition for International Trade, Industrial Policies and the Future of American Industry, (Washington), p. 55.

2/ Commission of the European Communities, European Parliament, Working Documents, Dec. 15, 1980, p. 50.

3/ Commission of the European Communities, European Parliament, Working Documents, (Doc. No. 1-673/80), Dec. 15, 1980, p. 49.

4/ Kenneth Gooding, "Italian Motor Industry II: Undeterred by Current Setbacks," Financial Times, Mar. 19, 1981.

5/ David Brand, "Japanese Cars' Success Worries Europe; Some Urge Restraints," The Wall Street Journal, Nov. 17, 1980, p. 26.

6/ Commission of the European Communities, European Parliament, Working Documents, (Doc. No. 1-673/80), Dec. 15, 1980, p. 49.

7/ Ibid.

8/ Wyn Grant, The Political Economy of Industrial Policy, London, Butterworths, 1982, p. 46, and National Economic Development Council, "Memorandum by Secretary of State for Trade and Industries," NEDC (83)49, Sept. 21, 1983.

Coal

European Community

EC coal policy is designed to increase domestic coal production for consumption within the EC. State assistance to the coal industry is regulated by a 1976 code of aids. The Commission regards state aids for coal as useful to help increase national energy supplies, preserve employment, and to guarantee the stability of coal production. State aids are also considered indispensable for the economic survival of EC coal producers given falling production and consumption over the past ten years. According to the Commission, coal aids are approved because coal producers are no longer in a position to resist the pressure of foreign competition without the help of national aids. 1/ Table 44 shows 1981 and 1982 state aids to the coal industry.

The high priority the EC has given the coal industry is illustrated by the fact that ECSC loans and grants to the industry in 1982 increased 738 percent over those in 1981 reaching 256.3 million ECU. Nineteen loans were granted to the United Kingdom, France and West Germany, nine of them with interest-rate subsidies. Total investment in the EC coal industry remained unchanged (1.8 billion ECU's in both 1982 and 1981) so that the contribution made by the ECSC loans towards financing these investments increased from 2 percent in 1981 to 14 percent in 1982. During 1954-82, the coal industry received 24.2 percent of all ECSC loans. 2/ During 1983-86, 36 million ECU's is expected to be expended to finance the transportation of coal from one member state to another. 3/ In previous years, a total of 47 million ECU's was expended for this purpose.

Finally, the Commission submitted a proposed regulation to the Council in September 1983 giving financial support to encourage investment to modernize coal production, to reduce mining companies' coal stocks, and to promote the production of brown coals (or lignites) and peat. 4/ This proposed regulation is the first step in the "solid fuels" program introduced by the Commission in 1983 to make coal a major substitute for crude petroleum. Despite the high cost of EC coal (it is more than double the cost of imported coal), the Commission believes that profitable mines and even low-profit mines should be maintained and, in certain cases, improved. 5/ The proposed aid program will be in addition to the 3-percent interest rebate EC coal producers currently receive or modernization investments. The proposed aid will be a direct nonrepayable grant of up to 25 percent of the eligible investment over a 5-year period (1984-88). 6/

1/ European Report, Aug. 31, 1983, No. 975, p. 7.
2/ Commission of the European Communities, 1982 ECSC Financial Report, 1983.
3/ Ibid.
4/ European Report, Aug. 31, 1983, p. 7.
5/ Ibid.
6/ Investment projects will be eligible where they involve underground capacity which has an annual average underground output of at least 380 Kg. per man hour, in the case of new capacities, for which the planned output is at least 600 kilogram per man hour.

Table 44.--State aids to the coal industry, by types of aid, 1981 and 1982,

	Total sum		Amounts per tonne	
	1981	1982	1981	1982
	Million ECU's		ECU's	
West Germany	1,162.3	754.8	1/ 12.42	1/ 7.97
Belgium	281.6	199.4	46.16	31.68
France	404.2	553.8	23.10	30.77
United Kingdom	845.7	718.4	6.77	5.76
Total EC	2,693.8	2,226.4	11.12	9.15
Indirect measures	40.0	48.2	.17	.20
Aids to coking coal	844.2	432.2	3.49	1.87
Direct measures	1,809.6	1,746.0	7.47	7.17
Art. 7 (investments)	309.2	236.3	1.28	.97
Art. 8 (personnel)	98.7	111.2	.41	.46
Art. 9 (stocks)	25.0	23.0	.10	.09
Art. 10 (strategic reserves)	50.6	59.1	.21	.24
Art. 11 (power station coal)	25.0	6.8	.10	.03
Art. 12 (loss coverage)	1,301.1	1,309.6	5.37	5.38

1/ These data do not include subsidies due to the third electricity-from-coal law. This law requires West German power stations to buy steam coal from the coal industry at breakeven prices. The additional cost incurred by the electricity companies using EC coal (mainly West German coal) is offset by increasing electricity prices. In 1981, this offset levy amounted to some 1,800 million deutschemarks (7.54 ECU's per tonne). A figure of 1,700 million deutschemarks (7.40 ECU's per tonne) is estimated for 1982.

Source: Commission of the European Communities, Twelfth Report on Competition Policy, (Belgium), 1983, p. 133.

The Commission proposes to provide financial support of 10 ECU per ton to reduce surplus stocks. According to the Commission, the sale of stocks would improve the financial situation of the coal mines by reducing their storage costs and by increasing their liquidity. The EC plans to reduce current stocks by 10 million tons annually over the next 3 years. To qualify for this aid, the producer must first have received Commission approval for its proposed restructuring program and have submitted a program on the reduction of stocks to the Commission for approval. Producers of peat (mostly Irish) and brown coal (mostly Greek but also West German and French) will also qualify for direct aid, but with the same 25-percent ceiling as applied to coal. Council action on the Commission proposals is expected in early 1984.

Computers and Peripherals and Telecommunications

France

The French Government began encouraging its telecommunications industry in the mid 1970's. The 1972 Sixth Economic Plan and the 1976 Seventh Economic Plan established programs to restructure the industry and increase subscriber usage.

The major reorganization of the telecommunications sector began in 1976. A major component of this plan was to reduce French dependence on foreign suppliers. To this end, the American company, International Telephone Telegraph (ITT), was forced to sell two of its subsidaries, and the Swedish company, L.M. Ericsson, was forced to sell its subsidary, Societe Francaise de Telephone Ericsson (STE), to the giant French electronics company, Thomson-CSF. This reform increased the French share of its home telecommunications market from 43 to 71 percent. French manufacturers also increased their share of the public-exchange equipment market from 39 to 80 percent. The French Government also nationalized Companie Generale d' Electricity (CGE) and Thomson-Brandt, the holding companies that control the major providers of exchange and transmission equipment to the French Administration des Postes et Telecommunications (PTT).

Directed procurement is another mechanism the French Government uses to protect its telecommunications industry. The French PTT purchases are made through Government-sanctioned cartels. The Socotel cartel provides switching equipment, and Sotelec supplies transmissions equipment. These cartels also have jurisdiction over coordination of research and development, technical specifications, and distribution of government investment funds. Since entry into the cartel by foreign firms is very difficult, foreign producers have limited access to the French telecommunications market.

To increase exports, the French Government provides liberal financing terms to purchasers of French telecommunications equipment. From 1980 to 1983, approximately $300 million in mixed credit financing was available for buyers of French equipment.

The French Government also aids its telecommunications and data-processing industries through domestic subsidies. A major program for rationalizing and improving the electronics sector was announced in 1982 Programme Pluranne en Faveur de la Filiere Electronique (Plan Electronique). According to the plan, approximately 140 billion francs (about $21 billion) from public and private sources will be invested in 10 strategic electronics industries over a 5-year period. Most of this aid, 55 billion francs, has been allocated to the telecommunications sector.

An objective of the plan is to improve efficiency and to aid the competitive position of the French electronics sector against Japanese and American firms. Accordingly, the large nationalized firms which dominate each electronics industry appear likely to receive priority in the future disbursement of program funds.

In addition to telecommunications, the plan will also emphasize development of computer-aided design (CAD), computer-aided manufacturing (CAM), modules for basic mini and microcomputers, engineering software with artificial intelligence, training and education, and research and development.

West Germany

From 1967 to 1979, West Germany gave 3.5 billion deutschemarks in aid to its computer industry, mostly in the form of R&D financing. Most of this aid went to Siemens, the largest West German computer manufacturer. The West German Government continues to give R&D support to the computer industry; it budgeted 58.8 billion deutschemarks of such aid in 1984.

United Kingdom

The British Government aids telecommunications, computer and peripherals, and other information technologies primarily through the Information Technology Division of the DTI. This division allocates about 30 million pounds a year to these industries. The Support for Innovation Program is the major mechanism through which funds are disbursed. Part of the SFI scheme is a recently established program to develop computer software, which provides grants equal to one-third of project costs. Funds will be distributed over a 5-year period.

The Alvey program is a research and development assistance program which encourages interaction among researchers. To this end, the program provides up to 50 percent funding for qualified projects which involve collaboration among researchers in two or more firms or research organizations. The total budget for the Alvey program is approximately 150 million pounds for 5 years.

The United Kingdom also provides sales assistance to its information technologies industries in the form of preproduction orders (PPO's). This scheme permits the government to purchase up to 4 prototypes of a product and distribute them on a trial basis to customers. If the customer decides after 1 year not to purchase the product, it is returned to the supplier and the DTI is responsible for any financial loss.

The main intervention mechanism used in the area of microelectronic applications is the Microprocessor Application Project (MAP). The MAP scheme consists of programs to increase public awareness, education and training programs, grant programs of 2,000 pounds for project feasibility studies, and research and development grants which fund up to 33 percent of viable projects. 1/ The MAP has a total allocation of 85 million pounds. By 1980, approximately 7 million pounds had been spent on awareness and training, 3.5 million pounds on feasibility studies, and 15 million pounds on research and development. 2/ The MAP scheme is considered one of the most successful industrial support schemes undertaken by the Department of Industry.

Heavy Electrical Equipment

A high degree of nationalistic procurement is a leading characteristic of the oligopolistic power plant markets. Most of the European electrical utilities are state-owned, and they rely on their indigenous manufacturers of heavy electrical equipment to supply all or most of their power plant machinery needs. 3/

France

The French Government began restructuring its heavy electrical equipment industry in the 1960's. Two monopoly suppliers were eventually established after a decade of Government manipulation: Framatone, the nuclear plant contractor, and Alsthom-Atlantique, the turbine generator manufacturer. 4/ France reportedly also assists its industry through research and development subsidies of up to 50 percent of project costs, and through investment subsidies. 5/

United Kingdom

The British Government based its national planning and rationalization policies for the heavy electrical equipment industry on the premise that only a national champion could compete with large Japanese and American companies. 6/ General Electric Co. (no relation to the U.S. company of the

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1/ Jim Northcutt, "Policies for Micro-electronic Applications in Industry," in C. Carter, ed., Industrial Policy and Innovation, (London: Heinemann), 1981, p. 215.

2/ Ibid.

3/ John Surrey, Trends in the Procurement of Electricity Generating Plant in Developing Countries, United Nations Conference on Trade and Development, Geneva, (TD/B/C.6/AC.9/3), Sept. 6, 1982, p. 6.

4/ John Surrey and W. Walker, "The European Power Plant Industry: Structural Responses to International Market Responses," Industrial Adjustment and Policy III,: Sussex European Papers, No. 12, 1981, pp. 16 and 17.

5/ National Electrical Manufacturer Association submission.

6/ John Surrey and W. Walker, op. cit., p. 24.

same name) emerged as the national champion electrotechnical company after merging with English Electric and AEI in 1968. The British Government continued its attempts to consolidate and rationalize the industry through the 1970's but met political, industrial, and trade union resistance. 1/ The British Government also reportedly uses grants for research and development and domestic subsidies to assist its heavy electrical equipment industry. 2/

Machine Tools

European Community

The EC attempted to protect its machine tool industry in 1977 when it began bilateral talks with Japan on methods to improve the balance of trade. In 1982, Japan agreed to moderate its exports of 10 sensitive products, including machine tools, to the EC. 3/ At that time, the EC began a system of statistical monitoring to provide timely data on selected machine tool imports from Japan.

The EC has attempted to promote awareness and utilization of advanced technologies through stimulation of numerically controlled (NC) machine tool production; coordination of machine tool industry needs with those of other EC programs on advance technology; and coordination of public and private research efforts. 4/ The EC has also allocated $1.2 million for a market survey assessing ways to make the EC's machine tool firms more competitive. 5/

France

The French Government has assisted its machine tool industry for several years. Rationalization, consolidation, and a push towards high technology have been the mainstays of French plans for the industry.

In 1981, the French Government established a 3-year development program to restructure the industry into major industrial poles and to consolidate firms into large, strong, more competitive companies. Other objectives of the scheme were to reduce imports of NC machines from 60 to 35 percent of the market by 1984 and to assist the industry in becoming more high-technology oriented and competitive. 6/ The plan was allocated $423.2 million in direct state aid and $312.8 million in loan guarantees. 7/

1/ Ibid, p. 25

2/ National Electrical Manufacturers Associations Submission.

3/ Commission of the European Communities, Bulletin of European Communities Commission, No. 2, vol. 16, 1983, p. 9.

4/ Competitive Assessment of the U.S. Metalworking Machine Tool Industry: Report to the United States International Trade Commission on Investigation No. 332-149 . . ., Publication 1428, September 1983, p. 56.

5/ Ibid.

6/ Ibid., p. 70.

7/ Ibid., p. 71

The French Government also established the Machines et Equipments de Conception Absence program (MECA) to promote purchases of machine tools through public subsidization of new purchases. 1/ To further aid the industry and stimulate demand, the national education administration was allocated $160 million to equip vocational schools with advanced equipment. 2/ Although it is not stipulated that this money cannot be used to purchase imported machine tools, the "Buy French" policy is so pervasive in the French marketplace, that all or almost all of this money will most likely be used to purchase French machine tools. A 3-year research and development scheme (1982-85) was also supported by the French Government to study machine tool design, manufacturing processes, and factory automation. 3/

The French Government is reputed to have protected its machine tools home market by pressuring domestic customers to "Buy French." 4/ Nationalized companies, in particular, are reportedly informally instructed to use French suppliers even if the French manufacturers can only offer a prototype of a particular machine. 5/ Some French producers of machine tools have also reported that bank loans are more difficult to obtain for purchases of imported machines than domestically produced ones, even though the French model may be more expensive. 6/ The French Government also appears to have protected its home market through administrative requirements (e.g., the stipulation that customs documentation be printed in French and time-consuming procedures to obtain import licenses) which cause untimely delays and make imported products less competitive. 7/

In 1983, a Government plan was announced to accelerate the adoption of factory automation systems by manufacturers. The plan proposes to provide 110 million francs ($13.8 million) for applications research involving NC equipment, robots, CAD/CAM systems, and for grants and loans for investment. 8/ This scheme is part of the French Government's continuing efforts to make France more competitive technologically. The plan currently awaits EC approval.

The French Government allocated $350 million to create an Inter-Agency Robotics Committee during 1983-85. 9/ This Committee has the purpose of assisting the design, production, and application of robotics which will be competitive in domestic and international markets. The Robotics Committee will provide low-cost financing for installation, and will fund research and development projects and personnel training. 10/

1/ Ibid.

2/ U.S. Department of Commerce, Country Marketing Plan: France--Fiscal Year 1984, p. 34.

3/ Competitive Assessment of the U.S. Metalworking Machine Tool Industry . . ., USITC Publication 1428, September 1983, p.71.

4/ J. Russell Kraus, "France's Protectionism Fuels Tool Import Row," American Metal Market/Metalworking News, Nov. 14, 1983, p. 38.

5/ Ibid.

6/ Ibid.

7/ Ibid.

8/ J. Russell Kraus, "French Plan World Spur Automation," American Metal Market/Metalworking News, Oct. 17, 1983, p. 7.

9/ Competitive Positions of U.S. Producers of Robotics in Domestic and World Markets: Report on Investigation No. 332-155 . . ., USITC Publication 1475, December 1983, p. 27 and 32.

10/ Ibid.

West Germany

West Germany has provided about $32 million in research and development support for robotics and other advanced technologies since 1974. 1/ Recently, the Government has allocated $202.5 million for a 4-year research and development program on robotics, CAD/CAM, and other components of factory automation. 2/ The program is scheduled to begin in 1984 and will provide grants of up to 50 percent for firms and 100 percent to academic institutions for development of production technology. The program will also include education and training assistance. 3/

Italy

The Italian Government passed the 1965 Sabatini Act to stimulate investment in advanced capital equipment through the provision of special financing facilities. Under the act, banks receive aid and that enables them to grant deferred payments of up to 5 years for domestic purchases of industrial equipment, regardless of country of origin. 4/ Additionally, preferential interest rates are available and the seller may discount the bills in medium-term credit establishments. 5/ The Italian Government is currently considering extending the Sabatini Law to include leasing of equipment and tax relief for capital investments. 6/

To date, the Government of Italy has not given research and development high priority in its plans for the machine tool industry. However, it does provide low-interest loans and grants for manufacturing research projects.

United Kingdom

The British Government began aiding the machine tool industry in the 1930's with home-market protection. 7/ By the 1970's a variety of Federal programs were available for the purpose of improving production, upgrading technologies, and applications in the machine tool industry. Approximately $54 million was allocated to the industry for these purposes in 1975. 8/

From 1982 to 1983, the Department of Trade and Industry allocated 280 million pounds in support for information technology programs, 85 million pounds for the microelectronics applications program (MAP), 37 million pounds for CAD/CAM/MAT, 35 million pounds for flexible manufacturing systems (FMS), and 25 million for software.

1/ Ibid., p. 25.

2/ American Metal Market./Metalworking News, Dec. 7, 1983.

3/ Ibid.

4/ Competitive Assessment of the U.S. Metalworking Machine Tool Industry . . ., USITC Publication 1428, September 1983, p. 64.

5/ Ibid.

6/ Commission of the European Communities, The European Machine Tool Industry: Situation and Prospects, Commission Statement, Feb. 8, 1983, p. 37.

7/ At that time, only those tools unobtainable in the United Kingdom were admitted into the country duty-free. Anne Daly, "Government Support For Innovation in the British Machine Tool Industry: A Case Study", in C. Carter, ed., Industrial Policy and Innovation, (London: Heinemann), 1981, p. 53.

8/ Competitive Assessment of the U.S. Metalworking Machine Tool Industry . . ., USITC Publication 1428, September 1983, p. 66.

The British Goverment promotes the use and development of industrial robots through the Robot Support Program. In addition to funding feasibility studies, this scheme provides grants for the development of advanced robots and up to one-third the cost of installing new robots. 1/ Funding for the robotics program in 1982 was 10 million pounds, or $17.5 million. This aid may be used to purchase imports.

The Small Engineering Firms Investment Schemes (SEFIS) of 1982 and 1983 also benefit the machine tool industry, although a variety of industries are eligible for this aid. The purpose of the SEFIS schemes was to promote and assist in the purchase of advanced capital equipment, regardless of country of origin, through public subsidies. Each scheme provided one-third of the cost of the equipment. The 1982, SEFIS had a budget of 30 million pounds and was limited to engineering industries; all money was committed 8-1/2 weeks after the application process began. 2/ SEFIS 2 was budgeted at 100 million pounds and is open to all industries. 3/

The United Kingdom provided research and development assistance to the machine tool industry primarily through the Flexible Manufacturing Systems (FMS) development program. Up to one-third of R&D project costs are funded under this scheme. A firm may also qualify for a shared-cost contract in which the Government contributes 50 percent of R&D project costs and later recovers them through royalties on commercial sales. The FMS scheme also provides a subsidy which allows a potential customer to take a machine on a trial basis for 1 year prior to actual purchase. Furthermore, this scheme will pay one-third of the cost of installing an FMS system. Installation aid may be used to purchase imports. The Department of Trade and Industry allocated 35 million pounds, or $53.6 million under its 1982-83 FMS scheme.

Semiconductors

France

The main objectives of French policies for the semiconductor industry appear to have been to subsidize the development of advanced technologies and to "create a French national champion as an instrument of that technology policy." 4/ The French Government began strong assistance to the semiconductor industry through its development plans in 1977. Prior to that

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1/ Competitive Position of U.S. Producers of Robotics in Domestic and World Markets, USITC Publication 1475, December 1983, p. 27.

2/ United Kingdom, Department of Industry, SEFIS brochure.

3/ Ibid.

4/ A French national champion is the leader corporation in its industry. It is a broad-based industrial corporation whose large size is intended to take advantage of economies of scale. As national champion, the corporation has the right to request state assistance to "maintain the position of the firm and thus of the French." John Zysman, "French Electronics Policy: The Costs of Technological Independence," Industrial Policies in Western Europe, S. Warneke, ed., Praeger Publishers, 1975, p. 238.

time, assistance was provided to the semiconductor sector through subsidies to SESCOSEM, a large semiconductor company owned by the Thomson group. 1/

The Plan Circuits Integres (1977-80) allocated $132 million for the development of integrated circuit technology and production and for research and development. Included in this scheme were aids for microprocessor application development and electronics applications research and development. 2/

The French Government's policies for the semiconductor industry have included measures to help improve international competitiveness. The Government has used primarily mergers to achieve this goal. SESCOSEM was constituted through a merger initiated by the French Government in 1968. A decade later, nearly all of French-owned semiconductor production was consolidated into the emerging French electronics national champion, The Thomson group.

West Germany

West Germany began assisting its microelectronics industry in 1967 with a small amount of research and development support. The 1969 Second Data Processing Program broadened the scope of intervention to include comprehensive assistance for semiconductors, computer hardware and peripherals, computer software, and applications. 3/ From 1969 to 1976, this program was funded at $32 million. 4/ The semiconductor industry was specifically allocated about $192 million in Government assistance from 1974 through 1982. 5/ In 1983, a total of 300 million deutschemarks was budgeted for the microelectronics sector. Much of this aid was to help firms acquire equipment, regardless of country of origin.

The United Kingdom

The National Enterprise Board (NEB) was established in 1975 to promote efficiency and international competitiveness in strategic sectors of Britain's industry. The NEB began acquiring shares in key electronic industries, and by 1976, the NEB held interests in computers and peripherals, electronic systems, and integrated circuit production. In 1978, when NEB supported creation of Inmos a manufacturer of integrated circuits, the British Government began its first explicit program to aid the semiconductor industry. Prior to that time, the bulk of state aid to the electronics sector went to the computer industry. NEB invested 50.09 million pounds or $108.65 million in the equity of Inmos between 1978 and 1982. 6/

1/ The 1967 'Plan Calcul' allocated $36 million to the electronics component industry from 1967 to 1970. Most of this aid went to SESCOSEM. The Second Plan Calcul (1971-75) allocated $33 million to the components industry; again most of this aid went to semiconductors. Giovanni Dosi, "Institutions and Markets in High Technology: Government Support for Micro-electronics in Europe," in C. Carter, ed., Industrial Policy and Innovation, (London: Heinemann), 1981, p. 188.

2/ Ibid.

3/ Ibid., p. 187.

4/ Ibid, p. 188.

5/ Ibid.

6/ National Enterprise Board, "Annual Reports and Accounts," 1978, 1979, 1980, 1981, 1982, op. cit. Although plans to do most of its production in the United Kingdom, it has facilities in Colorado.

A significant market barrier for importers of semiconductors to the United Kingdom appears to have been Government standards for integrated circuits and components. Many British defense and telecommunications contracts have specified electronics standard BS 9000, General Requirements for Electronics Components of Assumed Quality, which has been interpreted as requiring the presence of an official United Kingdom inspector during manufacture of the product. 1/ Reportedly, this standard has been selectively used to prevent some imported products from receiving certification. 2/

Steel Mill Products

European Community

Within the EC steel market, the ECSC controls prices and levels of shipments and orchestrates restructuring, modernization, and rationalization of steel production. Since May 1977, these measures have been carried out through the Davignon Plan. The major objectives of the Plan are to re-establish the financial viability of EC steel producers and to restructure the industry through plant modernization and capacity reduction.

Prior to implementation of the Davignon Plan, the depressed conditions in the EC domestic steel market were addressed by short-term measures implemented through the January 1977 Simonet Plan. The Simonet Plan introduced voluntary quarterly production targets and guide prices to redress steel price levels on the EC market. These measures made way for the longer-term action of the Davignon Plan, where the objective was to restore the position of the EC steel industry by restructuring its production capacity. The goals of the Davignon Plan are to (1) establish minimum price levels in the EC market, (2) control levels of imports and shipments within the EC by domestic producers and, (3) restructure the EC steel industry.

Minimum price levels.--Since 1977, the Commission has attempted to impose and enforce minimum internal prices (or guide prices) for EC steel firms to avoid price undercutting in the EC. Enforcement of guide prices has proven a difficult task for the Commission because persistent excess capacity puts pressure on steel firms to cut prices in order to increase sales. Violators of guide prices are subject to EC sanctions, although lengthy appeals may be made through the European Court of Justice before paying any fines. In November 1982, the Commission set up a system of guide prices for main steel products with the purpose of providing more financial support for producers to finance their own restructuring programs. A year later, market prices were far lower than the guide prices and the official list prices published by steel companies. 3/

1/ Competitive Factors Influencing World Trade in Integrated Circuits: Report to the Subcommittee on International Trade on Investigation No. 332-102 . . ., USITC Publication No. 1013, November 1979, p. 61.

2/ Ibid.

3/ For example, hot-rolled coil was being sold within the EC at about $238 per ton, which was $85.00 less than the guide price for that product. "EC Commission Acts on Steel Prices," Europe, January/February 1984, p.44.

At the end of 1983, the Commission took tougher measures to enforce established minimum internal prices. At that time, some EC producers were cutting prices in an attempt to improve shrinking profit margins by selling more steel. The Commission maintained that its goal to cut production capacity by 27 million metric tons and eliminate 100,000 steel jobs could be accomplished only if steel prices were high enough to yield profits to producers. New minimum prices were established on January 1, 1984, and a stringent price control plan was proposed. 1/ Under this plan, shipments will be accompanied by certificates stating the steel's origin, and steel companies will be required to post a security deposit of $38.00 per ton against their steel sales within the EC. As a result, within 15 days of the publication of quarterly trade statistics, a country will be able to lodge a complaint with the Commission against an exporting company, and the Commission will have the power to collect the deposits if the complaint is proved valid.

The mandatory prices had a significant effect on internal competition. EC producers could not charge prices below the fixed minimum to compete with non-EC producers. Foreign suppliers, however, were free to sell within the EC below the fixed price. 2/ To prevent this situation from enabling foreign suppliers to capture a large share of the EC market, the Commission implemented two methods of controlling the volumes and prices of imported steel: (1) restrictive bilateral trade agreements were negotiated between the EC and 14 major supplier countries; and (2) with other countries, minimum import prices were imposed.

Control of imports and shipments within the EC.--The agreements between the EC and its major suppliers set ceiling levels on imports and internal prices for imported steel. If the exporting country stays within the negotiated ceilings, it is allowed certain penetrating margins. It can sell carbon steel at prices that are 6 percent below price levels that EC producers are required to charge. It can sell specialty steel at 4 percent below the EC's pricing structure. The EC suspended antidumping procedures against countries with which it had concluded bilateral trade agreements as long as they stayed within the permissible ceilings and penetration margins. If a supplier country exceeds the ceiling, it is allowed to continue to sell in the EC, but loses the penetration allowance and becomes subject to published basic prices for imports. The minimum import price system provides that sales negotiated below the guide price become liable to antidumping investigations. These settlements had the purpose of stopping the growth of imports' market share and minimizing undercutting of EC producers' prices by foreign competitors.

1/ Each steel maker would pay the guaranteed bond to the EC member state where its steel was produced. The bond would be returned if the steel producer complied with the minimum price and production quota requirement. A portion of the guarantee bond could be frozen at the Commission's request if the steel producer appeared to have violated this requirement. "EC Commission Acts on Steel Prices," Europe, Jan./Feb. 1984, p. 44.

2/ Ryan Trainer, "The Concrete Reinforcement Bars Case and the Davignon Plan: Judicial Endorsement of the ECSC's Crisis Policies," The Journal of International Law and Economics, vol. 14, no. 3, 1980, p. 574.

EC steel deliveries were also governed by the Davignon Plan. Each firm's delivery quotas are determined by the intra-EC/total delivery ratio for the 12-month period from July 1977 to June 1980 during which total production of rolled steel was highest. For products subject to production quotas, a firm's deliveries may not exceed the limit set by its assigned ratio of EC shipments to total production.

The Davignon Plan may encourage EC producers to compete aggressively outside the EC and to increase their exports of steel products. The quota decision requirement that a firm's intra-EC deliveries may not exceed the amount set by its assigned ratio of EC shipments to total production also provides a significant incentive to maintain exports. If a firm's deliveries to third countries decline, the amount it can deliver to its EC customers will also decrease. 1/ Given the highly capital-intensive nature of steel production, and the fact that prices within the EC are set at artificially high levels, the firm will want to ship the maximum possible amount of steel within the EC. By increasing its exports outside the EC, a multiplier effect will increase the firm's allowable EC shipments and thereby permit maximized production until the limit imposed by the production quota is reached. Under these conditions, a firm might be induced to compete so aggressively in foreign markets that it may sell its products below cost. 2/ The delivery ratio, therefore, encourages exports to third countries.

1/ A firm's maximum possible EC sales is the lower of two ceilings:

(1) $D=KQ$, where D is intra-EC sales, K is the intra-EC shipments ratio, and Q is the total production quota.

or,

(2) $D=\left(\frac{K}{1-K}\right)X$ This second ceiling is found by rearranging terms in the constraint

$K=\frac{D}{D+X}$, where X is exports

If X is below (1-K)Q, the second ceiling binds and an increase of one unit of X allows an additional $\frac{K}{1-K}$ units of D to be sold. Once X reaches (1-K)Q, then the first ceiling D = KQ, binds and there is no further incentive to increase exports. In fact, because there is a ceiling on overall production, further increases in exports would force the firm to reduce intra-EC shipments. Thus, there is an incentive not to increase exports.

2/ Ryan Trainer, op. cit., p. 587.

Production restructuring.--In 1978, the Davignon Plan instituted voluntary internal production quotas. Market conditions worsened, and in October 1980, for the first time in EC history, the Commission invoked article 58 of the Paris Treaty in October 1980, and declared a "state of manifest crisis" in the steel industry. 1/ A mandatory production quota system for most steel products was established to distribute the burden of job losses and plant closures resulting from EC efforts to cut surplus steel production capacity, and to return the industry to profitability. With some exceptions, production quotas are set on a quarterly basis for crude steel and four groups of rolled steel products. Each firm's quota is based on quantity reference production figures calculated from past output (July 1977-June 1980), during which the total production of the four groups of rolled steel was highest. EC firms that exceed their production quotas are liable to be fined. In July 1982, the number of products included in the production quota was increased to cover about 70 percent of total finished steel production in the EC.

The mandatory production quotas on raw steel and specific rolled-steel products were imposed on steel producers to give them time to recover and restructure. At West German insistence, certain specialty steel was exempted from the compulsory quotas. Small firms whose output does not significantly affect the state of the market were also exempted. Firms exceeding their production quotas were fined $80.00 per ton.

The Commission restructuring decision of June 29, 1983, calls for a total EC reduction in capacity of 26.7 million tons by 1985. Each member state's aids to their steel industries will not be approved unless the member government submits plans for meeting its share of this target. The capacity reduction target is tied to the approval of aids.

EC regulation of state aids.--In February 1980, the Commission introduced its first code of aids regulating state aid for the steel industry. 2/ Under the code of aids, the Commission permitted specific aids to be granted to the steel industry if the aid simultaneously provided for restructuring, was restricted in duration and intensity, and did not unacceptably distort competition. A decline in demand resulting in surplus capacity and falling prices, however, prompted member governments to provide subsidies to their steel industries. Prior to implementation of the aids code, most of the member governments' subsidies to their steel industries were not accompanied by reductions in capacity.

The increasing frequency and depth of the member governments' intervention in their steel industries was another factor that prompted the Commission to invoke a "state of crisis" in the steel industry. The purpose of the Commission's intervention was to ensure that the use of state aids was accompanied by effective plans for restructuring to reduce or eliminate capacity.

1/ Authority to declare a state of manifest crisis in the steel industry is given by Article 58 of the Paris Treaty.

2/ Commission Decision No. 257/80/ECSC of Feb. 1, 1980, "Establishing Community Aid System for the Steel Industry," in Commission of The European Communities, Official Journal of the European Communities, no. L. 29, June 6, 1980, p. 5.

In August 1981, given worsening conditions in the European steel industry, the Commission replaced its first steel aids code with a stricter set of rules designed to phase out aids within a fixed time period. 1/ The second aids code established strict rules that outline allowable state aids and the conditions under which they may be made and implemented. Member states are required to notify the Commission to receive approval for aid granted to investment, closure of plants, emergency purposes, research and development, and other projects by certain deadlines in 1982. The Commission notified the member states of its decision on these aid requests during the course of 1983.

The second code of aids extended the manifest crisis and established mandatory quotas for some products and voluntary quotas for others. Restructuring and capacity reductions were to be carried out with greater rapidity than under the previous code scheme. The Commission wanted to ensure that all aids to the steel industry were treated uniformly within a single procedural framework. All aids financed by the state or through state resources are considered under this code to be Community aids. As a result, they must be compatible with the orderly functioning of the common market.

The second code of aids sets forth the following objectives for the EC steel industry: restore financial viability; adapt to market requirements; convert steel regions to other industries; offset the social costs of reconstruction; retrain workers through employee assistance; modernize, restructure, reduce, or eliminate capacity; and restore competitiveness. All state aids had to be tied to the above purposes. These aids also had to be progressively reduced and eliminated within a given time period, and to not distort competition in the EC. All state aid to the steel industry is supposed to be phased out by December 31, 1985, when the second aids code expires. However, this deadline may very well be missed, because despite 8 years of intervention, the EC's steel producers are not profitable. Table 45 shows production quotas and steel aid authorized by the Commission and aid still pending approval. France, Belgium, and the United Kingdom are the heaviest subsidizers of their steel industries. Given its large share of production, West Germany is not a heavy subsidizer.

ECSC Loans and Grants

ECSC provides loans for industrial investment in the coal and steel industries, thermal power stations, worker's housing, and industrial conversion. In 1982, the ECSC distributed loans totaling 740.6 million ECU's, 91 percent more than in 1981. The ECSC increased its loans to the coal industry by 738 percent and to other industries by 736 percent. It increased it loans for industrial conversion by 89 percent, thermal power stations by 54 percent, and worker's housing by 22 percent. Finally, the ECSC has an increasingly involved in the financing of energy projects (e.g., coal mines, thermal power stations, and other projects involving the use of coal).

1/ Commission Decision no. 2320/81/ECSC of Aug. 7, 1981, "Establishing Community Rules for Aids to the Steel Industry." Commission of the European Communities, Official Journal of the European Communities, No. L. 228/14, Aug. 13, 1981, pp. 14-18.

Table 45.--Total aids to the EC steel Industry, approved or still subject to examination under the first and second aid codes

Member states	Maximum possible production as a share of total EC production 1/	Total notified aid	Total approved	Share of EC total approved	Approved as a share of country aid notified	Subject to examination as a share of country aid notified
	Percent	---Million ECU's---		-------Percent-------		
Belgium	9.5	3029	1572	17.4	51.9	48.1
Denmark	.6	81	81	.9	100.0	-
West Germany	31.6	4898	633	7.0	12.9	87.1
Greece	-	20	-	-	-	100.0
France	15.9	4991	3670	40.6	73.5	26.5
Ireland	-	232	66	.7	28.4	71.6
Italy	21.5	6887	695	7.7	10.1	89.9
Luxembourg	3.1	409	144	1.6	35.2	64.8
Netherlands	4.3	593	94	1.0	15.9	84.1
United Kingdom	13.5	4639	2077	23.0	44.8	55.2
Total EEC	100.0	25779	9032	100.0	35	65.0

1/ Total allocated EEC steel production was 168,601,000 tons.

Source: Production, compiled from the Commission of the European Communities, Bulletin of the European Communities, vol. 16, No. 6, 1983, p. 9; Commission of the European Communities, Fourth Report on the Application of the Rules for Aids to the Steel Industry, COM (83), 178 Final /2, Apr. 19, 1983, annex 1.

Table 46 shows ECSC loans paid out during 1954-82. During this 28-year period, the ECSC granted loans totaling 9.7 billion ECU's, of which 9.4 billion ECU's came from borrowed funds, and 260 million ECU's came from the ECSC's own resources. Redemption of the initial loans granted by third parties and guaranteed by the ECSC under article 54 reduced commitments to 99,000 ECU by the end of 1982.

Financing of industrial investments under article 54 (1) of the ECSC Treaty

ECSC loans for financing industrial investments in the EC amounted to 488 million ECU's in 1982, up 95 percent over the 1981 figure. ECSC loans to the steel industry fell from 224 million ECU's in 1981 to 140 million ECU's in 1982. The drop largely reflected the Commission's strict selection process in this industry, which is in accordance with the restructuring policy guidelines. The ECSC loans were only 5 percent of the total investment expenditure in the steel industry. ECSC loans to finance thermal power stations increased from 26.6 million ECU's in 1981 to 40.9 million ECU's in 1982. Three power stations were financed, two in France and one in the United Kingdom. Finally, in 1982 the Commission granted eight loans at market rates to finance investment projects in the EC and it granted one such loan abroad. Two of these projects related to raw-material supplies to the EC steel industry. Loans paid to finance the EC projects totaled 50.9 million ECU's.

Financing of Workers' Housing Under Article 54 (2) of the ECSC Treaty

The EC has a housing finance policy for workers in the coal and steel industries that may allow the industries to pay lower wages. The money is lent at an interest rate of 1 percent per annum on a long-term basis. The loans are generally granted in the local currency to avoid exchange risks to recipients. ECSC funds are used to build new housing and to purchase and modernize dwellings. Borrowers often combine this type of loan with loans at normal commercial terms and still benefit from an advantageous average rate. In 1982 ECSC paid out a total of 18.1 million ECU's in such loans. The ECSC financed 8,000 new dwellings in 1982, bringing the total number financed by the ECSC to 178,000.

Financing of Investments for Industrial Conversion Under Article 56 of ECSC Treaty

Over the past 10 years, the ECSC has given loans at reduced rates of interest to encourage the creation of new jobs in sectors other than steel and coal. During 1982, the ECSC Commission made 55 conversion loans, including 31 global loans to promote investment of small- and medium-sized enterprises. A reduced interest rate is granted on condition that some of the new jobs created will be reserved primarily for workers laid off or given reduced hours in the coal and steel industries. Under the ECSC treaty, requests for loans of this type are submitted to the Commission by the member state Governments concerned. As a result, the geographical distribution of the loans granted largely reflects the national policies on conversion.

Table 46.--ECSC loans paid and guarantees granted by types of investments and by countries, 1954-1982

Breakdown	Loans: From borrowed funds	Loans: From own resources	Loans: Total	Guarantees	Total loans and guarantees	Percent of total
	Million ECU's					-Percent-
Type of investment						
Coal industry	2,356.1	-	2,356.1	-	2,356.1	24.2
Iron ore mines	210.1	-	210.1	-	210.1	2.2
Steel industry	5,083.1	3.4	5,086.5	68.0	5,154.5	53.0
Thermal power stations	380.0	-	380.0	-	380.0	3.9
Industrial conversion	1,197.8	3.3	1,201.1	-	1,201.1	12.4
Workers' housing	80.2	243.6	323.8	-	323.8	3.3
Miscellaneous	87.5	10.1	97.6	.1	97.7	1.0
Total	9,394.8	260.4	9,655.2	68.1	9,723.3	100.0
Country						
Belgium	312.9	13.0	325.9	-	325.9	3.4
Denmark	61.0	1.5	62.5	-	62.5	0.6
West Germany	2,402.3	148.9	2,551.2	59.1	2,610.3	26.9
Greece	10.9	.4	11.3	-	11.3	0.1
France	1,778.1	42.5	1,820.6	8.9	1,829.5	18.8
Ireland	32.8	.7	33.5	-	33.5	0.3
Italy	1,442.2	15.9	1,458.1	.1	1,458.2	15.0
Luxembourg	167.4	5.5	172.9	-	172.9	1.8
Netherlands	242.2	15.5	257.7	-	257.7	2.7
United Kingdom	2,865.9	16.5	2,882.4	-	2,882.4	29.6
Non-EC	79.1	-	79.1	-	79.1	0.8
Total	9,394.8	260.4	9,655.2	68.1	9,723.3	100.0

Source: Commission of the European Communities, ECSC Annual Report, 1982, p. 25.

Other ECSC activities

The ECSC finances other aid programs through its operating budget rather than through borrowing. These programs provide job search assistance for workers threatened with or affected by redundancy (redeployment aid) and aid for research.

The ECSC provides income support for laid-off workers and helps them find employment in other sectors of the economy. Redeployment aid contributes toward the cost of organizing training courses and helps to facilitate re-employment by paying travel or resettlement allowances for redeployed workers. In 1982, redeployment aid amounted to 115 million ECU's, or $111 million, in which the steel industry accounted for the largest share of commitments. The ECSC also supports social programs in the steel industry, such as early retirement, which costs 113.4 million ECU's, or $109.7 million, in 1982. Research projects supported by EC includes 92 steel industry and 39 coal industry projects, for a total cost of 36 million ECU's in 1982. The EC also granted financial aid of 11 million ECU's to 67 social research projects in 1982.

Textiles and Apparel

European Community

The EC has intervened directly to protect and develop the EC textile industry. During the 1970's, the major focus of EC policy on textiles and clothing was the protection of the home market from imports and the maintenance of internal competition. 1/

The primary protection mechanism is the Multifiber Arrangement (MFA), which provides the basis for controlling imports from third countries. Import quotas under the MFA have the stated purpose of providing textile firms with needed time to adapt to conditions posed by international competition. In the EC's preferential trade accords with the Mediterranean and African, Caribbean, and Pacific (ACP) countries, the latter are guaranteed unrestricted access to the EC market for their industrial products. This arrangement is subject to a safeguard clause that allows the EC to restrict imports from these trade partners in certain defined circumstances. The EC has concluded a series of short-term arrangements with most of the Mediterranean countries, which enables both sides to monitor textile trade by reference to historical levels. Elsewhere in the field of external trade policy, the EC has a set of measures, such as safeguard clauses and antidumping procedures, which enables it to combat what it determines to be unfair competition and sharp disruptions of the market.

1/ Jose de la Torre and M. Bacchetta, "The Uncommon Market: European policies towards the Clothing Industry in the 1970's," Journal of Common Market Studies, vol. 19, No. 2, December 1980, p. 98.

EC attempts to maintain internal competition in the EC textile sector include a code of aids adopted in 1970. The code stipulates that any state aid for the sector should be temporary and decrease over time. 1/ The purpose of the code is to prohibit aid that might distort competition by favoring selected domestic firms.

The EC also gives financial aid to the industry during periods of crisis. In 1977, approximately 14.9 million ECU's, or $17 million, was allocated for restructuring the synthetic fiber sector. 2/ From 1975 to 1980 approximately 800 million ECU's were invested by the European Regional Development Fund to safeguard employment and rationalize firms in areas where textile employment constituted more than 10 percent of total industrial employment. 3/ Loans have also been provided through the European Investment Bank to assist regional modernization and conversion. 4/

From 1981 to 1983, 3.9 million ECU's was provided for shared-cost research and development contracts in the textile sector. 5/ This grant funded projects to improve garment physiology and construction, and applications of technology. A recent proposal adopted by the European Council to promote EEC industrial competitiveness allocates approximately 170 million ECU's for a 1984-87 research project on industrial technologies. Under this scheme clothes manufacture has been selected as the initial field for technology applications research. 6/

Between 1978 and 1980, the European Social Fund contributed approximately 44.8 million ECU's to train and educate workers in the textile and clothing sectors. 7/

The EC synthetic-fibers industry is confronted with the problem of overcapacity leading to low prices and huge losses. In December 1979, the major synthetic fibers manufacturers in the EC countries asked the Commission for permission to create a crisis cartel to limit production and maintain prices until the market conditions improved. The Commission approved the scheme under articles 85 and 86 of the Rome Treaty. In December 1979, however, the Directorate General for Competition reversed the Commission's earlier decision and asked the producers to dissolve the cartel on the grounds that a benefit to consumers, which is a requirement under article 85, was not evident. In late 1983, the synthetic-fiber industry again proposed to

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1/ Commission of the European Communities, The European Community Textile Industry, European File, April 1982, p. 4.

2/ Commission of the European Communities, The European Community Textile Industry, European File, April 1982, p. 4.

3/ Ibid., pp. 4-5.

4/ Ibid.

5/ Commission of the European Communties, Official Journal of the European Communities, No. C89/6, Apr. 7, 1982.

6/ The purpose of the scheme is not to develop a special porgram for the textile sector, but to ensure that this industry is euipped with the latest technology so that it may expand and defend its position on the world market. European Report, June 11, 1983, p. 14.

7/ Commission of the European Communities, The European Community Textile Industry, European File, April 1982, p. 5.

institute a crisis cartel to impose an orderly reduction in capacity. The proposed cartel, which would last until the end of 1985, would not involve the use of state aids to reduce capacity. A Commission decision on this request is pending.

A code of aids for the synthetic fiber industry was introduced in 1977 and was since extended until July 19, 1985. According to the Commission, capacity in the EC synthetic fibers industry must fall by 300,000 metric tons during 1983-86. Thus, the Commission carefully scrutinizes all state aid plans that are likely to increase the production capacity of companies. However, the Commission continues to take a sympathetic view toward state aids that aim to restructure the industry away from synthetic fiber production or helps companies to reduce capacity. The EC has imposed an antidumping duty on imports from the United States. The EC felt that the price of these imports was distorted by the American controls on the price of the oil from which the fibers are made.

France

In 1980, the French Government designated the textile and clothing industry as one of "strategic importance" and targeted it for specific restructuring and modernization efforts. A development scheme made the most dynamic firms in the industry eligible to sign development contracts entitling them to grants and low-cost loans. 1/ Healthy firms were also eligible under the scheme for participatory loans approved by the Interministerial Committee for Development and Aid to Employment (CIDISE) to strengthen their capital base and reserves. 2/ The plan also provided that banks be eligible for loans from a special guarantee fund, partially state financed, for lending to the textile industry. 3/ This fund is expected to generate an additional 500 million francs annually in long- and medium-term loans. 4/

The French Government proposed a package of state aids for the textile sector in 1982. This plan proposed to reduce the industry's social insurance contributions up to 12 percent. 5/ The plan also called for contracts of solidarity between the Government and participating textile firms; these contracts would guarantee investment assistance in return for replacing workers older than 55 with younger workers. 6/ The plan also provided for low-interest loans and the creation of a textile promotion center. 7/

The EC ruled that this package of state aid violated article 93 of the Rome Treaty and barred France from implementing the plan. The Government of France revised its scheme and announced a new plan in 1983. Under this plan, aid would be restricted to restructuring and improving only sound firms, total aid is reduced from 2 billion to 1.2 billion FF, and only certain sectors of the textile industry would be eligible for aid. The Commission approved the revised plan.

1/ Common Market Reports, Euromarket News, Nov. 18, 1980, No. 618, p. 5.
2/ Ibid.
3/ Ibid.
4/ Ibid.
5/ Anthony Moreton, "The High Cost of Stemming the Tide," Financial Times, Jan. 18, 1983, p. 10.
6/ The retired employee would receive 80 percent of pay from age 55 to 65.
7/ Ibid.

Disbursement of state aid to the French textile industry is the responsibility of the Textile Industry Structural Aid Commericial Modernization Committee (CIRIT). CIRIT provides funds for assisting mergers, modernization aid, rationalization assistance, and subsidies for trade organizations, research centers, and so forth. CIRIT is funded through a levy on textile products. 1/

Italy

The Italian Government's assistance to the textile sector from the late 1950's through the 1970's focused primarily on the acquisition of bankrupt textile manufacturing firms. 2/ Gepi, a state-owned financial holding company, was created in the late 1960's to exclusively perform salvage operations in a variety of industrial sectors. Gepi owned 110 bankrupt companies in 1975, and by 1978, 11 percent of textile and clothing workers were employed by Gepi-held firms. 3/ Private-sector producers alleged that they were unable to compete with the heavily subsidized state-owned companies. 4/ Gepi's operations were restricted to southern Italy when a new interministerial agency was created in 1977 to administer and coordinate all industrial policies.

Italy's textile and clothing sectors also benefited from the Wages Intergration Fund (CIG), established to stabilize unemployment in manufacturing industries during downturns in the economy. 5/ A tax relief introduced in 1978 to reduce employer's social insurance contributions, was opposed by the EC on the basis that it would give unfair advantage to specific textile and clothing firms. 6/

United Kingdom

After a long history of piecemeal intervention, the United Kingdom's first comprehensive attempt to restructure the textile industry was the 1959 Cotton Industry Act. 7/ This plan did reduce capacity in the sector, but it did not create a smaller or more competitive industry, nor did it achieve its objective of stabilizing employment. 8/

1/ OECD, Textile and Clothing Industries: Structural Problems and Policies in OECD Countries, 1983, p. 112.

2/ J. de la Torre and M. Bacchetta, op. cit., p. 10.

3/ Gepi's strategy was to acquire bankrupt companies, implement a restructuring or reconversion plan, and then sell the revamped company to a private owner. Ibid.

4/ Ibid.

5/ The CIG provided up to 50 percent of an employee's wages for 1 year in cases of redundancy or shortened hours, provided the employee was retained by his company. Ibid., p. 112.

6/ Ibid.

7/ OECD, Textile and Clothing Industries: Structural Problems and Policies in OECD Countries, 1983, p. 111.

8/ Ibid.

During a period of economic hardship in the mid-1970's, Britain introduced the Temporary Employment Subsidy (TES) to stabilize employment in all sectors. 1/ The Commission approved this scheme provided beneficiary firms were in good financial condition and the program temporary. By 1978, nearly one-half of all applications received for aid under TES were from textile and clothing firms. About 19 percent of total textile and clothing employment was maintained by the TES programs. Furthermore, the British Government extended the program six times through 1977, and budgetary allocations increased from 7 million pounds in 1975 to a projected 432 million pounds in 1978 and 1979. The European Commission concluded that the TES kept declining firms artificially alive and thus violated directives concerning unfair competition. After negotiations, the EC allowed a 1-year-only extension of the TES subject to aid restrictions and reductions in funding. 2/

The United Kingdom's 1972 Industry Act provides the legal basis for several textile and clothing assistance schemes. The 1973 and 1976 Wool Textile Industry Schemes provided about 24 million pounds for investment and rationalization. 3/ The 1975 Clothing Industry Development Scheme (CIDS) was a major tool for Government intervention in the textile and clothing industries. The Government had allocated approximately 20.9 million pounds to rationalize and restructure the industry without increasing its capacity by the time the scheme closed for applications in 1977. 4/

The Clothing Industry Productivity Resources Agency (CIPRA) was created in 1978 to coordinate research and development available to the industry from other sectors. The agency was initially funded with a grant of 450,000 pounds from CIDS.

Federal Republic of Germany

Although direct federal subsidies are not given specifically to the textile and apparel industries, general assistance schemes (such as the ERP program for small businesses, regional promotion programs, export promotion development, and research and development assistance) are available. 5/ Additionally, each Laënd (state) has its own industrial assistance programs which do provide specific subsidies and loan guarantees for the textile and clothing industries. 6/

1/ TES encouraged employers to defer or avoid layoffs affecting 10 or more employees by providing a direct grant or up to 20 pounds per week, per worker who without the subsidy would become redundant. The subsidy was renewable for 6 months at a reduced rate. Jose de la Torre and M. Bacchetta, op. cit., p. 114.

2/ Ibid.

3/ The second wool textile scheme closed for applications at the end of 1977. By Mar. 31, 1983, 22 million pounds had been paid under these schemes. Secretaries of State for Trade and Industry, Scotland, and Wales, "Industrial Development Act 1982 Annual Report," London, July 1983, p. 112.

4/ J. de la Torre and M. Bacchetta, op. cit., p. 116.

5/ OECD, Textile and Clothing Industries: Structural Problems and Policies in OECD Countries, 1983, p. 113.

6/ Ibid.

Although financial subsidies are minimal, West Germany does provide a high level of import protection for its textile and clothing industries:

> "Since the early 1960's, the industry has enjoyed one of the highest effective rates of protection of any sector in Germany (averaging about 21 percent during the early 1970's). . . . In addition it has been estimated that the quantitative restrictions imposed on a large number of clothing products represent a tariff equivalent level of protection of 45 percent." 1/

West Germany's imposition of quantitative restrictions are not in violation of EC directives, since member states are permitted to and do negotiate bilateral nontariff agreements within the constraints set by the MFA. 2/

1/ J de la Torre and M. Bacchetta, op. cit., p. 108. See also A. D. Neu, "Protection in the German Textile Industry," in W. M. Corden and G. Fels, Public Assistance to Industry, (Boulder, Co.: Westview Press), 1976, pp. 176-181.

2/ A. D. Neu, op. cit., p. 177.

ASSESSMENT OF TARGETING IN THE EC

The member states of the EC appear to have targeted a small group of industries. The ability of these countries to target, however, is limited by GATT obligations and by the conditions of EC membership. In particular, the Rome Treaty that formed the EC forbids state aids that injure industries in other member states. This constraint limits targeting in the EC to cases where a crisis creates so much pressure for subsidies that the EC must allow exceptions, or to cases where the major competitors are outside the EC.

EC member states aid specific industries either to avert a sudden large decline in employment in a depressed industry or to catch up with a perceived U.S. or Japanese lead in a new-technology industry. Depressed industries that have received substantial aid include steel, coal, shipbuilding, and automobiles. New-technology industries that have received substantial aid include aircraft and electronics. Although different member states often aid the same industries, the policies of the different member states toward those industries are sometimes very different. For example, Belgium, France, and the United Kingdom give much more aid to their steel industry than West Germany does; and the United Kingdom and West Germany allow Japanese auto imports to take a much larger share of their domestic markets than France does.

The goals of EC member state targeting vary depending on whether it involves depressed or new-technology industries. In depressed industries, these countries usually allow capacity to decline, although they may act to lessen the decline in capacity that otherwise would take place. In new-technology industries, these countries try to develop industries that are effective world competitors and to close a perceived technological gap with the United States and Japan. EC member state targeting of new-technology industries has not achieved its goals.

Depressed Industries

The EC member states have aided a number of industries whose decline in international competitiveness threatened to cause extensive unemployment. Import restraints are a major tool used by the EC to target troubled industries. For example, several EC member states have negotiated voluntary restraint agreements involving Japanese automobiles. These agreements all restrict Japanese automobiles to a smaller share of the market than is allowed by the voluntary restraint agreement involving the U.S. market. EC member states also have given financial aid to many depressed industries. Unlike Japan, which does not use government-ownership to support depressed industries, EC member states often give financial aid by buying equity. These countries also give low-interest rate loans, grants, and loan guarantees. Tax benefits are sometimes given to depressed industries, but their use seems to be less common than the use of financial aid.

The EC member states have used different tools to benefit different depressed industries. The coal and steel industries have benefited from import restraints, financial aid, and tax benefits. 1/ Shipbuilding has

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1/ EC member states have aided the coal industry both to maintain employment and to reduce dependence on imported oil. Therefore, they have encouraged both the production and the consumption of coal. The net effect of these policies could be either to reduce or increase sales of U.S. coal producers.

benefited from financial aid and tax benefits. The automobile industry has benefited from import restraints and financial aid. The textile and apparel industry has been protected from imports, but has received little in the way of direct subsidies. In fact, the EC prevented a number of subsidies that the member states planned to give this industry.

The EC often tries to ensure that its member states' efforts to cope with the problems of a depressed industry do not prevent a reduction in the industry's capacity. For example, the EC will only allow member states to aid their domestic steel industries, if those industries reduce their capacities by a specified amount. Furthermore, the EC often will not approve a member state's aid to a depressed industry unless the aid will end by a specific date. These steps do not eliminate the possibility of targeting. In a number of cases, the EC member states have funded investments that replaced outmoded capacity. If a government subsidizes replacement investments that the industry would not have funded on its own, even if those investments do not increase capacity over its previous level, those subsidies will lessen the decline in capacity that otherwise would take place. The risk that funding replacement investment could maintain industry capacity above nonsubsidized levels is increased because capacity reduction targets often are based on arbitrary assumptions concerning future market trends and prospects. 1/

New-Technology Industries

Many European executives and government officials believe that European technology is behind that of the United States and Japan. The EC member states are responding to this perceived technological gap in two ways. First, they have taken steps to encourage new-technology firms. These steps principally have included tax incentives for R&D and government sponsorship of financial institutions that make capital more readily available to such firms. Aid to new-technology firms usually is not directed to specific industries. Second, they have directly funded R&D. Table 47 compares government funding of R&D in EC member states to funding in the United States and Japan. In 1980, Government funding of R&D was larger, relative to gross domestic product, in the United States than in any EC member state except the United Kingdom. The United Kingdom, West Germany, France, the Netherlands, and Belgium, however, spent a higher share of GDP on government-funded R&D than did Japan. Furthermore, the governments of the United Kingdom, West Germany, France, Belgium, Italy, the Netherlands, and Denmark spent a higher share of GDP on R&D to promote industrial growth than did the government of Japan or of the United States.

1/ For example, the capacity reduction goals set for the steel industry are based in part on projected exports that seem unrealistic given the rise of the steel industries of several developing countries. See also the discussion of capacity reduction targets in shipbuilding in Jan Tumlir, "Salvation Through Cartels? On the Revival of a Myth," The World Economy, vol. 1, No. 4, October 1978, pp. 390-391.

Table 47.--Government funding of research and development as a share of gross domestic product in the United States, Japan, and EC member states, 1980 1/

(In percent of GDP)

Objective	Country										
	United States 2/	Japan 3/	West Germany	France	United Kingdom	Italy	Netherlands	Belgium	Denmark	Ireland	Greece
Agriculture, forestry, and fishing	0.03	0.06	0.02	0.04	0.05	0.02	0.08	0.03	0.04	0.12	0.04
Industrial growth	4/	.03	.12	.11	.09	.08	.06	.09	.06	.03	.01
Production of energy	.14	.07	.17	.09	.08	.11	.04	.05	.04	.01	.02
Transport and telecommunications	.03	.01	.02	.03	.01	4/	.02	.01	4/	.01	4/
Urban and rural planning	.01	.01	.02	.02	.01	4/	.03	.01	.01	.03	4/
Environmental protection	.01	.01	.02	.01	.01	4/	4/	.02	.01	4/	4/
Health	.15	.02	.05	.05	.02	.02	.05	.08	.05	.05	4/
Social development	.03	4/	.04	.02	.01	.01	.06	.07	.04	.05	.02
Earth and atmosphere	.03	.01	.03	.03	.01	.01	.01	.02	.01	4/	.01
Advancement of knowledge	.05	.28	.50	.25	.30	.16	.55	.19	.18	.18	.06
Civil space	.18	.03	.05	.07	.02	.03	.03	.03	.02	4/	4/
Defense	.58	.01	.12	.41	.72	.01	.03	4/	4/	4/	.01
Not specified	4/	4/	4/	.01	4/	4/	.03	4/	4/	4/	4/
Total	1.22	.53	1.15	1.13	1.34	.46	1.00	.61	.46	.47	.18

1/ Data for Luxembourg are not available.
2/ Data for the United States only include Federal Government funding.
3/ Data for Japan are estimates. The OECD believes these estimates understate R&D spending by from 10 percent to 15 percent.
4/ Less than 0.005 percent.

Source: Official Statistics of the OECD.

European fears of a technological gap focused on aircraft and electronics. In electronics, they have been particularly concerned with information technology, industries whose products process and transmit information: computers, semiconductors, and telecommunications equipment. These industries have benefited from government financing of R&D and from financial aid. They also benefited from government procurement preferences, but the use of these preferences has declined dramatically. Despite the apparent targeting of the EC member states' electronics industry, those countries are still behind the United States and Japan in electronics. EC member state targeting of the aircraft industry has had mixed results. The Concorde project involved large expenditures to construct an aircraft that was a near total commercial failure. Airbus Industries, which received substantial funds from the West German, French, and British governments, did manage to gain a substantial share of world markets. These governments, however, have not received promised royalties on Airbus sales. Viewed strictly in commercial terms, the return on these governments' investment in Airbus Industries has been inadequate. The overall effect of the targeting of aircraft on the economies of the EC member states is uncertain. For example, other new-technology industries might have fared much better had they not competed with a highly subsidized aircraft industry for trained personnel and other resources.

Despite EC member state aid to new-technology industries, these countries' perceived technological position has worsened relative to the United States and Japan. A recent survey asked European business executives to name the countries that they felt were technological leaders; 84 percent named the United States, and 63 percent named Japan. Only 35 percent named West Germany, the EC member state that was selected most often, approximately 18 percent named the United Kingdom, and approximately 15 percent named France. Furthermore, the executives generally believe that in recent years, the EC member states have fallen even further behind the United States and Japan in technology. 1/

1/ George Anders, "Europeans Offer Reasons for their Research Lag," Wall Street Journal, Feb. 1, 1984, p. 28. The survey allowed respondents to select more than one country as a technological leader.

PROFILES OF SPECIFIC INDUSTRIES

The following is a presentation of background material which serves as a profile of selected industries that are alleged to have been targeted by the EC and/or one or more of its member states. Statistical tables in appendix B of this report may be referred to for a comparison of U.S. industries, foreign industries, and overall U.S. and EC industry exports for specific years ranging from 1963 to 1981. More precisely, table B-1 shows U.S. producers' shipments, exports of domestic merchandise, imports for consumption (total and from the EC), apparent consumption, and employment in the selected industries. Tables B-2 through B-47 show EC, U.S., and various countries industry's exports, by principal markets. Finally, tables B-48 through B-58 compare U.S. and EC exports to world markets.

Aircraft and Aerospace

Description and uses

Aircraft are defined as machines or devices supported by buoyancy or dynamic action, capable of atmospheric flight. Included in this grouping are kites, balloons, gliders, airplanes, helicopters, and parts for each of these products. Spacecraft are structures capable of leaving the earth and its atmosphere to perform a specific mission in space. Included in this category are satellites, space vehicles, and launch vehicles.

U.S. industry profile

It is estimated that 1,280 establishments produced aircraft, spacecraft, and parts in 1982. Production is generally concentrated in the following States: California, Kansas, Texas, and Washington. The top four manufacturers accounted for an estimated 61 percent of domestic shipments in 1982. 1/ The majority of aerospace products are sold directly from the manufacturer to the end user, although for small airplanes, balloons, kites, and gliders, a dealer/distributor network is used to market the product.

Wide fluctuations in employment are quite common, principally due to cyclical demand for aerospace products. The U.S. industry mainly employs skilled labor. According to industry data, employment in the aerospace industry increased during 1954-72. The majority of these workers were employed in the production of military aircraft which was used in both the Korean and Vietnam Wars. Employment declined significantly in 1977 due to reduced shipments of military and commercial aircraft. During 1978-81, employment trended upward, as new generation civil aircraft production was undertaken and military aircraft shipments increased, but declined in 1982. The reduction in employment in the aerospace industry in 1982 reflects decreased civil aircraft orders due to the depressed financial condition of the world's airline industry and increased competition from abroad.

To the extent that any loss of domestic and/or international market share results from targeting practices, the corresponding absence of each $1 million in production not undertaken by U.S. aircraft and aerospace manufacturers would translate into an estimated 28 workers displaced in all sectors of the U.S. economy (based on 1982 production/employment relationships,) according to the staff of the U.S. International Trade Commission, using the Bureau of Labor Statistics' input-output model as shown in the following tabulation:

1/ U.S. Department of Commerce, U.S. Industrial Outlook, 1983, p. 31.

Industry sector	Displaced employment
	Number
Aircraft	14
Other manufacturing	6
All other	8
Total 1/	28

1/ Aerospace is not represented in these figures.

EC and member state industry profiles

In the European Community, there are several countries which have an active aerospace manufacturing sector, producing military and civil aircraft and engines, and auxiliary components and parts. Total sales of EC-produced aerospace products rose from $31.1 million in 1978 to $34.0 million in 1980 (the latest year for which data are available). The majority of these sales were for military applications. Employment in all EC countries manufacturing these products rose from 419,257 persons in 1978 to 461,718 persons in 1980, or by 10 percent. 1/ Information regarding the three largest aerospace manufacturing industries in the EC (France, the United Kingdom, and West Germany) are shown in the following sections.

France.--In the mid-1950's the French aerospace industry gained prominence in the civil aircraft market with the first medium-range jet (Caravelle) and later developed one of the first Mach 2 military fighter planes (Mirage II). The 1960's were marked by the start of French military export trade and the realization of several European collaborative programs. During the 1970's, the industry continued to grow and expand, helped by the determined policies of successive governments which invested heavily in the industry. 2/ The main goal in that period was the balance of civil with military activity; the latter strongly predominated at that time.

The French industry is currently one of the leaders in the western aerospace industry, occupying second place after the United States in overall sales and third in terms of employment. The industry produces airframes and complete aircraft, helicopters, engines, missiles, spacecraft, and electronic equipment. 3/ There are approximately 6 or 7 firms which account for the majority of France's aerospace production. 4/ The two largest aircraft and engine manufacturers are nationalized companies. The French Government also owns 20 percent of another large airplane producer. 5/ Additionally, the largest French manufacturer of aerospace products is a major partner in the European consortium, Airbus Industries.

1/ Commission of the European Communities, The European Aerospace Industry, Trading Position and Figures, 1982, pp. 55 and 61.
2/ "The French Aerospace Industry," Interavia, April 1983, p. 325.
3/ Ibid, p. 327.
4/ Jane's All the World Aircraft, 1981-82, p. 44.
5/ "French Industry," Interavia, June 1982, p. 581.

Sales of aircraft and aerospace products produced in France are normally made directly by the manufacturer to the end user. French aerospace sales totaled $7.9 billion (52 billion francs) in 1982 compared with $5.3 billion (24 billion francs) in 1978. Industry sources indicate that the French market accounts for approximately one-third of the industry's total sales. 1/ Employment in 1982 was estimated at 116,000 persons, including those involved in aircraft engine production, compared with 103,424 persons in 1978. 2/ The French industry, like its American counterpart, employs mainly skilled labor.

France has fostered its development by a broad system of international cooperation programs in both civil and military aerospace production. French industry officials indicate that this cooperation is important for France, which has a technically advanced aerospace industry, but which faces limitations due to the country's size, financial constraints, and reliance on export sales. Currently, a large portion of France's cooperative programs are with West Germany and cover commercial aircraft, satellites, and missiles. Additional programs link France with Italy, the United Kingdom, Sweden, the Netherlands, and Spain. 3/

Industry sources indicate that France is continuing to modernize its aerospace industry in order to close the gap between its technological capabilities and those of the United States. Key thrusts of France's modernization program include development of robotics for assembly line tasks, and increased mechanization in production facilities. 4/

The United Kingdom.--In the late 1960's the United Kingdom led Europe's aerospace industries, and was, among western nations, second only to that of the United States. However, United Kingdom has since fallen behind France to occupy third place in the free world. 5/

The United Kingdom's industry currently manufacturers a wide range of aerospace products, including military aircraft, commercial airplanes (medium-transports, commuter, and executive planes), helicopters, aircraft engines, communications satellites, and electronic equipment. There is at present one large aircraft builder, one engine manufacturer, one helicopter manufacturer, and numerous equipment producers. Additionally, one British firm is a partner (20-percent share) in the European consortium, Airbus Industries.

Sales of aircraft and aerospace products produced in the United Kingdom are normally made directly by the manufacturer to the end user. Estimated British aerospace sales totaled $10.3 billion in 1982 compared with $10.7 billion in 1981. Industry sources indicate that the United Kingdom's market

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1/ "French Aerospace," Flight International, Nov. 12, 1983, p. 1289.
2/ "National Aerospace Employment, " Airline Executive, May 1983, p. 5.
3/ "France Planning More Joint Programs," Aviation Week and Space Technology, May 30, 1983, pp. 83-84.
4/ "Financial Aid in France Threatened by Economy," Aviation Week and Space Technology, Nov. 6, 1982, p. 194.
5/ "U.K. Aerospace Adjusts to Thatcher Regime," Aviation Week and Space Technology, Mar. 14, 1983, p. 119.

accounts for approximately one-half of the industry's total sales. 1/ Employment in 1982 (the latest year for which data are available) was estimated to be 185,000 persons compared with 191,000 persons in 1978. 2/ The U.K. industry, like its American counterpart, employs mainly skilled labor.

Because of shortages of working capital and high-interest rates, the British aerospace industry, like its American and European counterparts, has moved toward increased reliance on joint projects with other countries. Currently, the largest cooperative program is Airbus 300/310. The British industry is also participating with a large U.S. aerospace firm in a joint manufacturing program for military aircraft. The helicopter manufacturer has teamed with an Italian firm to develop a new helicopter with both civil and military applications. Most recently, the British engine producer has become part of two international programs to develop new aircraft engines; the first venture is with French and Italian firms to manufacture a helicopter engine; the second is with firms from the United States, West Germany, Italy, and Japan to develop a new engine for commercial transport airplanes. 3/

West Germany.--The West German aerospace industry ranks along with the industries of France and the United Kingdom as a leader of aerospace industries in Western Europe. Unlike the aerospace industries in France and the United Kingdom, West Germany's industry is not a net exporter. However, exports accounted for 38 percent of gross sales of West Germany's aircraft industry in 1981. 4/ Total sales for the entire West German aerospace industry were approximately $4.97 billion (DM 9.03 billion) in 1980 (the latest figure available). Approximately 53 percent of airframe manufacturer's sales were for military applications, 34 percent for civil applications, and the rest for space and other applications. In 1980, there were approximately 7 airframe manufacturers, and approximately 41 aerospace equipment manufacturers, including several powerplant manufacturers. 5/ West German powerplant manufacturers derived 88 percent of their sales from military applications, 8 percent for civil applications, and the remaining 4 percent for nonaerospace applications. 6/ A large German aerospace manufacturer is also a major partner (37.9 percent share) in the European consortium, Airbus Industries. Employment in the industry increased gradually to 76,000 persons in 1982 from 61,478 persons in 1978. 7/

The primary customer for West German aerospace products is the West German Federal Government. The Government has also involved itself in the industry directly through international aircraft production programs, Government organizations facilitating aerospace research and development, and the promotion of mergers to reshape the structure of the industry.

1/ "British Aerospace Industry," Aviation Week and Space Technology, Mar. 14, 1983, p. 119.

2/ "National Aerospace Employment" Airline Executive, May 1983, p. 5.

3/ "Costs Push British Toward Joint Efforts," Aviation Week and Space Technology, May 30, 1983, p. 177.

4/ "German Industry Faces Funding Cuts," Aviation Week & Space Technology, Sept. 6, 1982, p. 222.

5/ Jane's All the World Aircraft, 1981-82, p. 76, and "West German Aerospace," Interavia, April 1982, p. 352.

6/ "West German Aerospace," Interavia, April 1982, p. 337.

7/ "National Aerospace Employment," Airline Executive, May 1983, p. 5.

The West German aerospace industry has participated in a number of international joint ventures for producing aircraft. Funding for many of these projects came from the Government. Frequently, the Government also bought the products of these projects. Major international joint ventures involving the West German aerospace industry date back to 1959 and include involvement with aerospace industries in the United States, the United Kingdom, France, Japan, and Italy. The West German Government encouragement of international joint ventures is motivated by a desire to lessen dependence on the United States for weapons systems, to avoid a balance-of-payment problem due in part to large arms purchases, to prevent the exporting of jobs, and to develop the country's technology base.

The West German Government is the primary funding source for the DFVLR--German aerospace research and experimental establishment-- with the Federal and State Governments providing 80 percent of the organization's 1982 budget. The DFVLR is involved in transport and communications systems, aircraft technology, space technology, earth resources, and energy and propulsion technology. Another organization assisting the aerospace industry is the IABG--industrial facilities operating company. IABG is a commercial company, with the Federal Government owning the majority of shares and a nominal number of shares being held by the country's major aerospace companies. The firm undertakes test programs for industry, so that firms do not have to invest in individual test facilities. IABG income is derived from contracts.

The West German Government has involved itself in the structure of the industry. For example, in 1980, the Government encouraged the merger of two large aerospace companies. The objective was to improve the competitive position of both companies. Other West German Government involvement includes a Defense Ministry sponsored program, the Economic Structural Technologies Using Metallic Materials, to develop cost-effective manufacturing methods in aircraft construction.

Currently, the West German aerospace industry faces funding cuts by the Government for both military and civil aircraft. The Government's aerospace policy includes reducing West German participation in marginally successful international aerospace joint ventures, reducing the aerospace industry labor force as programs are completed, and encouraging greater reliance on private funding by industry rather than Government subsidies.

U.S. market

The largest share of the domestic market for aircraft and spacecraft is made up of commercial users; the remainder consists of U.S. Government divisions and private individuals. According to industry sources, the United States is one of the world's largest markets for aircraft. In 1981 (the latest year for which complete data are available), there were an estimated 241,656 aircraft and spacecraft in use in the United States. 1/ The vast majority are planes used by U.S. commercial airlines.

Under the Airline Deregulation Act of 1978, the view of mass air transit, as a public utility requiring Government regulation, was renounced in favor of

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1/ Aerospace Industries Association, Aerospace Facts and Figures, 1982/83, and General Aviation Manufacturers Association, GAMA Stat Databook, 1983.

free-market economics. The reasoning was that a more competitive environment in the airline industry would lower fares and improve service. 1/ Deregulation allowed U.S. carriers to freely enter new markets or exit those which were no longer profitable. The deregulation of the airline industry was also beneficial to equipment manufacturers, because as new routes were opened up, orders for aircraft increased. Open price competition and fare wars also increased the demand for airline seats, creating a demand for new aircraft. 2/

The early 1980's represent the third reequipment cycle for U.S. airlines. Beginning with the first equipment cycle, which commenced with the advent of the commercial jet transport in the late 1950's, each generation embodied new technology responsive to economic pressures. The first was a response to the demand for long-distance, fast, and comfortable transportation. The second generation, which encompassed the development and sale of the wide-bodied "jumbo-jets" (mid-1960's) emerged as a response to the growth in demand for passenger-mile capacity, and overcrowded airplanes. In the latest generation of commercial transports, environmental pressures and increased cost of fuel have resulted in new designs. 3/

Domestic manufacturers of aircraft and spacecraft produce a wide variety of products. The U.S. market demand for aircraft and spacecraft is cyclical, fluctuating with interest rates, the cost of fuel, U.S. Government procurement policies, increased passenger traffic, and route expansions. The latter two were cited by U.S. airlines as the primary factors influencing market demand for aircraft. Other factors noted were efficiency and passenger comfort. 4/ Demand for both business and private use aircraft is influenced by such factors as intended use, convenience of scheduled airlines, cost of fuel, financing, cost of the aircraft, and degree of expertise of the buyer. The demand for military aircraft and spacecraft is based on complex political factors and budgetary limits. Commercial spacecraft demand depends on the intended use and such market forces as cost efficiency, and availability of the product, and the necessary launch vehicles.

U.S. shipments

The aerospace industry is one of the Nation's most cyclically volatile in terms of sales and shipments. The sector exhibits its own unique business cycles for civil aircraft, military aircraft, and spacecraft. 5/ The following tabulation shows estimated U.S. shipments of aircraft, spacecraft, and parts during 1954-82 (in millions of dollars): 6/

1/ Robert Newhouse, "A Sporty Game, Betting the Company," The New Yorker, June 14, 1982, p. 58.
2/ Ibid.
3/ Barry Bluestone, Peter Jordan, and Mark Sullivan, Aircraft Industry Dynamics, Boston, 1981, p. 47.
4/ The Economic Impact of Foreign Export Credit Subsidies on Certain U.S. Industries, . . ., USITC Publication 1340, January 1983.
5/ Ibid., footnote 1, p. 174.
6/ Data obtained from Aerospace Industries Association, Aerospace Facts and Figures, various issues, 1954-83.

Year	Civil aircraft	Military aircraft	Spacecraft	Parts	Total
1954	1/ 5,226	1/	183	75	5,484
1958	1/ 6,482	1/	163	249	6,894
1963	559	2,876	1,911	740	6,086
1967	2,861	4,476	2,199	439	9,975
1972	3,308	3,247	1,656	3,437	11,648
1977	4,451	4,364	1,870	5,762	16,447
1978	6,458	4,664	2,324	6,238	19,684
1979	10,644	5,470	2,539	8,052	26,705
1980	13,058	6,521	3,483	8,867	31,929
1981	13,228	8,630	3,856	10,254	35,963
1982	8,610	10,356	4,851	10,041	33,858

1/ Includes both civil and military aircraft shipments.

During the 1950's, the U.S. aerospace industry entered the modern era. The industry's products underwent radical transformation when the jet engine replaced the piston engine in the commercial aircraft sector. Since that time U.S. shipments of civil aircraft have greatly expanded, rising to their highest level ($13.23 billion) in 1981. U.S. shipments of civil aircraft declined significantly in 1982 due to high-interest rates, decreased airline earnings, and lack of confidence in the airline industry by financial backers. 1/

U.S. shipments of military aircraft have gradually increased during 1963-82, rising to $10.36 billion in 1982. Over the period 1963-67, U.S. shipments increased 55.6 percent, resulting from the escalation of the Vietnam War. A large portion of these shipments were helicopters, which were used extensively for the first time during this period. 2/ Military deescalation caused shipments to decline in 1972. However, since that time, military aircraft shipments have increased annually as the United States assumed a more strategic role in international affairs.

U.S. shipments of spacecraft began to increase following the successful Soviet Sputnik launch in 1957. During 1958-82, domestic shipments of spacecraft increased twenty-sevenfold, reaching $4.85 billion in 1982. The U.S. space program began with unmanned expendable rockets and has evolved to reusable airplane-like spacecraft. In the most recent years, increased shipments are due, in part, to a rapidly growing military space program.

U.S. shipments of parts for use in civil, military, and space applications have increased significantly during 1954-82, commensurate with

1/ "Carriers Turn to Innovative Financing," Aviation Week and Space Technology, Nov. 8, 1982, pp. 46-49.

2/ Barry Bluestone, Peter Jordan, and Mark Sullivan, Aircraft Industry Dynamics, Boston, 1981, p. 42.

the use of aerospace products. Shipments of parts rose from $5.5 billion in 1954 to $33.9 billion in 1982.

U.S. imports

U.S. imports of aerospace products have risen annually during 1963-81, increasing from $91.1 million to $2.6 billion (table B-1, app. B). However, imports fell 4 percent, to $2.5 billion, from 1981 to 1982. The majority of these imports consist of small airplanes, helicopters, and parts for aircraft and spacecraft. The level of import penetration in the U.S. aerospace market is relatively low, but has increased annually over the last two decades. The ratio of imports to consumption was 2 percent in 1963, but by 1982 had risen to 6.5 percent.

Imports of aerospace products from the EC increased each year during 1963-82, except for 1972. The value of these imports rose from $31.3 million in 1963 to $1.3 billion in 1982, and accounted for an average of more than 50 percent of total U.S. aerospace imports during that period. The majority of these imports were aircraft engines, small airplanes (both turboprop-and-jet engined), helicopters, and parts for civil aircraft. Additionally, during 1978-82, the United States imported approximately 30 European-built large transport aircraft. The ratio of EC imports to U.S. consumption of aircraft and aerospace products ranged from 0.6 percent of consumption in 1963, to 5.1 percent in 1982.

Conditions of competition in the U.S. market

The domestic aerospace industry dominated the U.S. market in almost every sector during 1963-82. In addition to excellence in product quality and innovation in technology, the after-sale support provided by U.S. firms has built their reputations as leaders in the field. Post-sale support has become a key determinant in procurement of aircraft. Purchasers are particularly concerned with ease of service, product reliability, parts availability, and long-run minimization of operating costs.

During 1963-82, the European aerospace industry delivered hundreds of aircraft and engines, of all types, to the United States. In the early years the majority of these products were not commercially successful. These ventures, however, illustrated the European industry's ability to build a wide range of aircraft, and their determination to become a viable competitor in the U.S. market.

In the past decade the European industry has worked to raise its technological level and competitiveness. The factors that are important to a firm's ability to compete in the U.S. aerospace market include high product quality, reliability, availability of affordable financing, and competent after-sale support. In the past decade EC aircraft firms have proved their capabilities in all three areas and have become important competitors in the U.S. market.

According to industry sources, the European aerospace industry, as a whole, has a solid business base in the United States. In the civil area, European manufacturers compete in large transports, business and commuter aircraft, engines, helicopters, and miscellaneous aircraft subassemblies and parts. The number of airplanes built by EC aerospace firms in use by U.S. airlines 1/ increased from 76 (3 percent of total fleet) in 1978 to 232 (6 percent of total fleet) in 1982. 2/ The four foreign manufacturers competing in the U.S. civil helicopter market are all EC-based firms. In 1982, these firms accounted for over 25 percent of the domestic helicopter market, compared with 10 percent in 1978. 3/ Industry sources attribute both increases in market share to intensified marketing efforts by European manufacturers, coupled with favorable financing. In the military aircraft area, EC aerospace firms produce fighters, bombers, light attack aircraft, tactical aircraft, helicopters, and engines, as well as other military products. These military aircraft manufacturers have been, for the most part, unsuccessful in capturing a significant portion of the U.S. market. However, in recent years, the U.S. Government has purchased a small number of defense-use airplanes and helicopters from European sources. EC firms have also been unable to capture a significant share of the domestic market for spacecraft, or aircraft parts. According to industry sources, the only area in which the Europeans offer products not available from U.S. manufacturers is in supersonic transport aircraft. Overall, the estimated share of the U.S. market accounted for by EC manufactured aerospace products rose from less than 1 percent in 1963 to 5.1 percent in 1982. Industry officials indicate that this increase in market share has been at the expense of domestic producers.

International markets

The United States is the world's leading supplier of aerospace products. Industry officials indicate that U.S. sales of these products represent approximately 60 percent of the free-world total. Other major producers of aircraft, spacecraft, and parts (in order of importance) are located in the United Kingdom, West Germany, and Canada. 4/

The market for aerospace products has spread throughout the world, with the heaviest concentration in North America, Europe, and Asia. In the world market for aircraft, the vast majority of commercial export sales are made to foreign governments rather than to private sector airlines, because most foreign airlines are state-owned national carriers. The largest part of the remaining export sales are made to foreign military establishments. 5/

1/ Includes major airlines, commuter airlines, charter services and all aircraft over 12,500 pounds operated by air taxis, commercial operators, and travel clubs.

2/ Aerospace Industries Association, Aerospace Facts and Figures, 1983/84, 1983, pp. 94-95.

3/ The Economic Impact of Foreign Export Credit Subsidies on Certain U.S Industries, . . ., USITC Publication 1340, January 1983, pp. 79-80.

4/ "Canada Aerospace '83," Aviation Week & Space Technology, Apr. 18, 1983.

5/ Bluestone, Jordon, and Sullivan, op. cit., p. 167.

The factors influencing demand in the international market for aircraft are identical to those in the U.S. market discussed earlier in this report. Both U.S. and European producers market their products internationally in a similar fashion. Interest in the product is generated by appearances at trade shows, magazine articles and advertisements, and direct mail programs. Sales offices are located in various locations throughout the world, with a large staff of salesmen that remain in constant contact with potential purchasers. However, in recent years, aircraft firms have been forced to compete on the basis of coproduction percentages, as well as price and quality. Since virtually all international sales are made to governments rather than private firms, overseas purchasers are often willing to pay a premium price in return for a share of manufacturing that would help their trade balance and create employment for their own workers. 1/ The U.S. and European aerospace industries, because of their large size (first and second in the free world, respectively), and diversity of product manufacture, have been able to meet foreign demand for offsets and coproduction. This has enhanced both industries' international competitiveness and made the critical difference in many aircraft sales. Officials of the U.S. industry assert, however, that the European governments often became involved in the sales process, using political pressure to sell aircraft.

U.S. exports

Exports sales are very important to aerospace manufacturers, as the economies of scale involved can lower a firm's unit costs substantially, and improve competitiveness and profitability. As a share of estimated U.S. shipments, exports represented 17.8 percent in 1963. By 1982, this share had risen to 34.4 percent. U.S. exports of aircraft, spacecraft, and parts rose from $1.1 billion in 1963 to a peak of $14.6 billion in 1981, before declining to $11.6 billion in 1982 (table B-2). The decline in exports in 1982 was caused by a worldwide decrease in demand for aircraft and spacecraft brought about by the worldwide recession and high-interest rates. Additionally, increased foreign competition from European producers in many traditional export markets contributed to the decline. Over the last two decades, the statistical reporting category "not disclosed" was the leading line item for U.S. exports of aerospace products. These exports were primarily aircraft and parts for military use throughout the world. Japan, West Germany, and Canada represented the other major markets for U.S. aerospace exports during 1963-82.

The U.S. aerospace industry contributes a larger positive trade balance than any other U.S. industry, except agriculture. 2/ The U.S. aerospace trade surplus increased from $12.0 million in 1954 to $9.2 billion in 1982.

EC exports

EC exports of aircraft and aerospace products increased from $627.2 million in 1963 to $10.0 billion in 1981 (the latest year for which data are available (table B-3). The major markets for these exports throughout the

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1/ Ibid, pp. 175-176.
2/ Ibid., p. 78.

period were France, the United States, and West Germany. Data on French, British, and West German exports are discussed in the following sections.

France.--French exports of aircraft and aerospace products increased more than fifteenfold, rising from $118.5 million in 1963 to $2.0 billion in 1981 (table B-4). The United States was the major market for these exports in 1981, accounting for approximately 26 percent of the total. Exports to other important EC export markets include the United Kingdom, Australia, Spain, and Italy. The majority of French exports have been for military applications. However, in recent years the industry has also begun to export large civil transports and helicopters.

United Kingdom.--British exports of aerospace products rose from $129.0 million in 1963 to $2.6 billion in 1981 (table B-5). The United States was the major foreign market for these exports, accounting for approximately 10 percent of the total. The vast majority of British exports are large transport aircraft engines. However, in recent years the industry also has begun to export small civil airplanes, helicopters, military planes, and miscellaneous aircraft equipment.

West Germany.--West German exports of aircraft and aerospace products increased from $60.6 million in 1963 to $3.4 billion in 1981 (table B-6). The major market for these exports throughout the period was France, which accounted for approximately 75 percent of these West German exports in 1981. The United Kingdom and Italy were also important German export markets. In recent years, the majority of West German exports have been subassemblies and parts for large civil transports delivered to France for final assembly in Airbus Industries aircraft. Additionally, West Germany exports a small amount of helicopters, turboprop commuter aircraft, and miscellaneous aircraft equipment.

Conditions of competition in international markets

The European aerospace industry has been much more successful in its penetration of the world market than it has been in the U.S. market. Through increasing the range of products manufactured and aggressive marketing techniques, the Europeans have steadily increased their free-world-market share since 1978. The industry has also strengthened its competitive position by forming inter-European collaborative ventures in both the military and civil area, allowing the industry to pool the technical knowledge of several firms. Additionally, the industry has entered into production and licensing agreements with non-European firms, gaining access to markets which previously have been unavailable or restricted.

According to industry sources, approximately one-half of the top 40 aircraft and aerospace manufacturers in the free world are located in member countries of the EC. 1/ The majority of these firms are partially or totally State owned. U.S. industry sources maintain that because of this ownership,

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1/ Commission of the European Communities, The European Aerospace Industry, Trading Position and Figures, 1982, pp. 74-75.

European governments frequently assist in the marketing of European-produced aerospace products. Currently, the four areas in which European aerospace products are effectively competing with U.S.-built products in the international market are large transports, military aircraft, commuter aircraft, and business jets. In 1963, the European aircraft industry posed little threat to the U.S. industry because they were not successful in marketing their aircraft. However, with the advent of Airbus Industries, this position has changed. Industry officials indicate that the European share of the international market exceeded 30 percent in 1982. The European industry has earned a reputation for quality products, timely delivery, and dependable after-sale support on par with U.S. firms.

Apparel

Description and uses

The products covered in this section include wearing apparel and accessories of textile materials (primarily manmade fibers, cotton, and wool) and of leather. 1/ In 1982, apparel made from manmade fibers accounted for 60 percent of total U.S. production of apparel made from textile materials, cotton apparel accounted for 37 percent, and wool apparel for 3 percent. Leather wearing apparel accounted for less than 1 percent of total U.S. apparel shipments in 1982.

The major apparel categories included in the coverage are men's and boys' furnishings and suits and coats; women's and children's outerwear; sweaters; undergarments; nightwear; waterproof garments; headwear; hosiery, gloves, scarves and mufflers; and apparel belts. Of these, men's and boys' furnishings, which includes shirts, nightwear, underwear, neckwear, separate trousers, and work clothing; and women's outerwear, which includes blouses, dresses, suits, and coats, accounted for almost two-thirds of total U.S. shipments in 1981.

U.S. industry profile

Consumers purchase apparel from a variety of retail outlets, comprising specialty shops, department stores, national chainstores, discount stores, and factory retail outlets. Most of these outlets purchase apparel directly from importers and/or manufacturers. Some of the larger department stores maintain their own buying offices in New York, which import apparel directly. Large national chainstores usually contract with manufacturers, both here and abroad, to produce apparel according to the chains' specifications. Some specialty stores and small-to-medium-size department stores join independent buying groups which combine orders from several stores, buying in volume. In addition, specialty stores may buy from jobbers 2/ which supply these outlets with a variety of goods that would otherwise be unavailable to them. Discounters also purchase apparel from jobbers and, along with factory outlets, purchase excess merchandise directly from U.S. manufacturers.

The U.S. apparel industry is a highly competitive and fragmented industry, consisting primarily of many small firms and a few large multinational companies. (In 1981, 85 percent of apparel producing establishments employed less than 100 persons.) The competitive nature of the industry stems primarily from the rapid shifts in fashion and styles. Most of the large multinational firms manufacture several product lines, such as women's wear, men's wear, and even children's wear; the smaller companies typically specialize in one-product area. Some restructuring has taken place in the industry as the larger firms have increased their market share.

1/ Specifically excluded is apparel made from fur, rubber, and plastics.

2/ A jobber is a wholesaler that operates on a small scale or sells only to retailers and institutions.

Because of their broader product lines and ability to finance professional management expertise and the latest technological developments, larger firms have been able to capitalize on the few growth areas occurring in a generally static market. However, industry sources indicate that small firms will retain their role in the industry because of their ability to adapt quickly to fashion changes and to produce profitably at small volume levels.

Three types of establishments are found in the apparel industry: manufacturers, jobbers, and contractors. Manufacturers produce their own garments from materials which they have purchased. On the other hand, jobbers sell manufacturers' finished products (or, in some instances, buy raw materials, contract out the garment production, and then market the finished products). In contrast, contractors manufacture garments for jobbers and/or manufacturers which in turn provide the required materials. Contractors do not become involved in sales, but rather ship the finished garments back to the jobbers and/or manufacturers for distribution.

Apparel production currently takes place in approximately 23,000 establishments, a decrease from almost 25,000 in 1978. The U.S. apparel industry developed in the Northeast where currently about half of the apparel producing establishments are located, (principally in New York). Apparel manufacturing gravitates to areas where a large supply of less expensive labor is found. Consequently, after World War II, some apparel production began to move to the South, reducing labor costs and taking advantage of the generally beneficial business environment. Although the South currently has fewer establishments than the Northeast, these establishments employ, on the average, more than twice as many persons than those in the Northeast. This reflects the South's newer and larger plants and its greater production of men's apparel, which typically requires larger scale production than the more fashion-oriented women's apparel.

The apparel industry ranks sixth in manufacturing employment. The number of employees in the industry remained around 1.3 million during 1978-80 and then decreased 10 percent to just under 1.2 million people in 1982. (Employment for all manufacturing from 1978 to 1982 declined 6 percent.) The number of production workers in the apparel industry decreased 13 percent from the level in 1978 to approximately 1.0 million in 1982.

The hourly wage of apparel production workers averaged only $5.16 in 1982 compared with $8.14 for all manufacturing; nevertheless, the U.S. apparel industry hourly wage was considerably higher than the hourly rates of approximately $1.50 or less found in some of the principal foreign suppliers (i.e., Hong Kong, Taiwan, and Korea). This disparity is significant since labor costs typically account for about one-third of the wholesale value of U.S.-produced apparel. Although productivity, measured in terms of the value added per production worker, increased 29 percent from 1978-81, this improvement has not sufficiently closed the price gap between U.S. and foreign producers.

To the extent that any loss of domestic and/or international market share results from targeting practices, the corresponding absence of each $1 million in production not undertaken by U.S. apparel manufacturers would translate into an estimated 55 workers displaced in all sectors of the U.S. economy (based on 1982 production/employment relationships) according to the staff of the U.S. International Trade Commission, using the BLS input-output model, as seen in the following tabulation:

Industry sector	Employment
	Number
Apparel	31
Other manufacturing	15
All other	9
Total	55

Selected member state industry profiles

France.--French consumers of apparel are generally very style conscious, in keeping with their image as world fashion leaders. 1/ Therefore, specialty stores or "boutiques" account for approximately 60 percent of the retail market in France. Specialty retailers buy primarily from sales agents, wholesalers, importers, or buying associations, which often buy for hundreds of independent specialty retailers. Department stores, which represent about 15 percent of the market, have branches in almost every major French city. Most French department stores have central buying offices which purchase apparel directly from importers and manufacturers and some even maintain buying offices in New York City. Mass merchandising stores, discount stores, and mail-order firms account for most of the remaining portion of the retail market.

The French apparel industry, like the U.S. industry, is highly fragmented and composed of a few large firms and many small companies. However, the French industry is much smaller than its U.S. counterpart, consisting of approximately 4,000 companies. Some restructuring has taken place in the French industry as larger successful companies have taken over smaller weaker firms. Employment has declined in the past 10 years, from approximately 330,000 persons in 1973 to 250,000 in 1983. Industry sources reported a reduction in the textile and apparel workforce of 4.5 percent during 1979-81, though employment reportedly stabilized during 1982 and 1983.

Apparel production in France, in terms of quantity, declined 10 percent from 1971-79, decreasing from 407.0 billion units in 1971 to 366.5 billion units in 1979. The following tabulation shows trends in French apparel production for the years 1971-79 (in millions of units):

1/ Country Market Survey, "Apparel, France," U.S. Deparment of Commerce, August. 1979, p. 1.

Year	Apparel
1971	407,001
1972	441,109
1973	424,964
1974	420,115
1975	397,470
1976	417,096
1977	407,489
1978	377,617
1979	366,453

In terms of value, apparel shipments increased from slightly less than $4.3 billion in 1975 to about $5.0 billion in 1980, though much of this increase reflects inflation. Declining French apparel production has been largely the result of a soft market due to rising inflation and unemployment. The industry, plagued with outdated production methods and obsolete equipment, has also been facing increased competition from imports. Some technological advancements have been implemented by the French industry, especially in the shirt and menswear segments.

Italy.--Italian consumers, like French consumers, are highly style conscious and selective in their purchases of apparel. 1/ In Italy, specialty stores, with their ability to respond quickly to rapid shifts in the market, account for approximately three-quarters of the retail market. Most specialty stores purchase apparel from wholesalers, sales agents, importers, and to a lesser extent, buying associations. Department stores in Italy account for about 10 percent of the retail market. Variety and mass merchandising stores, (often subsidiaries of department stores), stall markets, discounters, chain stores, and mail-order firms account for most of the remaining share of the market. These retailers principally buy through sales agents and wholesalers; central buying organizations are not well developed in Italy.

The Italian apparel industry is even more fragmented than the U.S. industry and is made up of numerous small firms and a few large companies. The number of apparel firms in Italy declined from 2,250 in 1972 to just under 2,000 in 1977, and is believed to have declined further in the 1980's. Employment in the industry also declined from about 215,000 persons in 1972 to approximately 195,000 persons in 1977, and then declined further to under 190,000 in 1980. These declines took place in spite of the Italian labor unions' restrictions on employee dismissal and the Italian Government's policy since 1970 to maintain industry employment levels.

Italian apparel shipments, in terms of value, increased from approximately $3.1 billion in 1975 to an estimated $6.6 billion in 1980, and then declined to $6.3 billion in 1982. All but about 15 percent of the growth

1/ Country Market Survey, "Apparel, Italy," U.S. Department of Commerce, August. 1979, p. 1.

between 1975 and 1980 was due to inflation. 1/ Trends in these shipments during 1975-82 are shown in the following tabulation (in millions of U.S. dollars):

Year	Value of Italian apparel shipments
1975 1/	3,085.1
1976 2/	3,794.7
1977 2/	4,523.3
1978 2/	4,754.0
1979 2/	6,436.9
1980 3/	6,600.0
1981 4/	6,100.0
1982 4/	6,307.0

1/ Value of production was reported in Comitextil Bulletin 80/1, published by the coordination committee for the textile industries in the EEC, in 2.337.2 million UCE/EUA and converted into U.S. dollars using a conversion factor of 1.32.

2/ Shipments for these years were based on production indices as reported in the same Comitextil Bulletin using 1975 as the base year.

3/ Shipment value based on increase reported in Comitextil Bulletin 81 2/3.

4/ Shipment value for these years based on trend reported in U.S. State Department Airgram, CERP 521: Industrial Outlook Report-Italian Textile 1982.

According to industry sources, much of the real growth that occurred during 1975-80 was due to increased exports as Italian firms improved their marketing strategy by emphasizing brand names. In addition, government subsidies and partial nationalization (primarily of those firms that were going bankrupt) assisted in stabilizing the industry. 2/

U.S. market

Overall demand for apparel in the United States has been relatively static. In recent years, consumption increased between 1 and 2 percent annually, closely following population growth. The major factors influencing demand for apparel have been changes in consumer lifestyles, fashion, and consumer buyer power, interest rates, and retailers' attitudes as affected by the general economic climate. In terms of value, U.S. apparent consumption increased over 150 percent in the past 15 years to $54 billion in 1982

1/ Ibid., p. 5.

2/ The Fibers, Textiles, and Apparel Industry Panel, Committee on Technology and International Economic and Trade Issues, The Competitive Status of the U.S. Fibers, Textiles, and Apparel Complex, National Academy Press, Washington, D.C., 1983, p. 62.

(table B-1). Much of this increase, especially in the value of U.S. shipments, was due to inflation. Real growth occurred in imports as foreign companies, especially those in the low-cost, Far Eastern countries grew and gained experience in the manufacture and marketing of apparel. The U.S. apparel market is supplied by imports mostly from the low-wage countries of the Far East, primarily Hong Kong, Korea, Taiwan, and China. These countries along with the Eastern European and South American countries, supply the U.S. market with low-to-medium-priced apparel. The EC countries supply the market mainly with medium-to-high-priced merchandise.

Expenditures for clothing and accessories, 1/ as a percent of total personal expenditures, declined from 5.8 percent in 1978 to 5.1 percent in 1982. In response to sluggish consumer spending, producers and retailers kept inventories at low levels.

U.S. shipments

The value of U.S. shipments of apparel increased almost 130 percent from $20.6 billion in 1963 to $47.4 billion in 1982 (table B-1). Most of this increase reflected inflation, rather than real growth in production. In terms of 1972 dollars, the value of the apparel shipments increased 8 percent overall from 1972 to 1982 as shown in the following tabulation (in millions of 1972 dollars):

Item	1972	1977	1979	1980	1981	1982 1/
Apparel shipments--millions of 1972 dollars	27,810	30,560	29,759	29,715	30,370	30,122

1/ Estimated.

According to the Federal Reserve Board's index of industrial production for the apparel industry, U.S. apparel production increased 51 percent from 1963 to 1977; stabilized from 1977-79; and then declined in 1980 and 1981, as shown in the following tabulation:

Year	Production index
1963	89.1
1967	100.0
1972	109.4
1977	134.2
1978	134.2
1979	134.4
1980	127.0
1981	120.4

1/ Excludes footwear.

The decrease in production during 1980-82 reflected the general economic slowdown of the period and increased competition from imports.

U.S. imports

U.S. imports of apparel totaled approximately $6.9 billion in 1981, over six times higher than the value of imports in 1969 (table B-1). In terms of quantity, apparel imports fluctuated during 1969-81, declining to lower levels in 1973 and 1974, and again in 1979 and 1980, reflecting the economic slowdowns of those years. Overall, the quantity of imports grew 106 percent from 1.5 million equivalent square yards in 1969 to 3.1 million equivalent square yards in 1981, as shown in the following tabulation:

Year	Imports (in million equivalent square yards)
1969	1,520.1
1970	1,686.1
1971	2,097.6
1972	2,225.9
1973	2,089.8
1974	1,937.0
1975	2,076.8
1976	2,428.4
1977	2,466.3
1978	2,905.4
1979	2,671.2
1980	2,884.1
1981	3,135.9

The significant increase in the value of imports reflected rising prices, due in part, to inflation and increased shipments of higher quality, more expensive items. The major foreign sources of apparel are Hong Kong, Taiwan, and Korea, which together accounted for almost 60 percent of the total value of U.S. apparel imports during 1978-82. China became the fourth largest source in 1980 when it was granted most-favored-nation tariff treatment and its shipments rose 305 percent over the 1978 level to $244.8 million. The European Community's (EC) share of total U.S. apparel imports declined from 31 percent in 1967 to 5.7 percent in 1982.

U.S. imports of textiles and apparel have been regulated through a series of bilateral trade agreements since 1961. However, these regulations apply primarily to less developed countries and Japan, and not to EC countries. From 1961 until 1971, only trade in cotton textiles (including apparel) was covered under the agreements, but as imports of manmade fiber textiles increased, the United States negotiated (in 1971) bilateral agreements with five Asian countries. The result was a limit on shipments of textiles of wool and man-made fiber in addition to cotton. Finally, in 1974, the Arrangement Regarding International Trade in Textiles, commonly known as the Miltifiber Arrangement

(MFA), which was sanctioned under the General Agreement on Tariff and Trade, was negotiated among textile and apparel importing and exporting countries. 1/ The MFA provides an international legal framework within which importing countries can negotiate agreements with exporting countries to limit their shipments of textiles and apparel of cotton, wool, and manmade fibers. The MFA went into effect in January 1974 for 4 years, was twice extended, and currently runs through July 1986.

Under the MFA, the United States has negotiated agreements with 21 countries 2/ providing for specific limits 3/ on U.S. imports of individual textile and apparel products or groups of products and for consultations on products not covered by specific limits when predetermined import levels are reached or when the United States believes imports of a particular product threaten market disruption. Similar agreements were negotiated with four non-MFA signatories (Taiwan, China, Costa Rica, and Mauritius) under section 204 of the Agricultural Act of 1956. 4/ Also, the United States has agreements with nine other countries 5/ that provide for consultations should their exports to the United States cause market disruption.

Imports' share of the apparel market, in terms of value, grew from 2.8 percent in 1967 to 13.9 percent in 1982. However, when duty, freight, insurance, commissions, and importers' markup are added to the custom's entry value, imports' market share would have been closer to 25 percent in 1982. Also import penetration is much higher in specific product areas, such as gloves, sweaters, shirts and blouses, outerwear coats, and trousers, where imports' market share for trousers was 34 percent in 1982; and for sweaters, it was just over 56 percent.

Italy and France are small suppliers of apparel to the United States; each accounted for less than 1 percent of apparent U.S. consumption during 1963-82. In 1982, Italy ranked seventh in terms of the largest foreign sources of apparel, accounting for about 3 percent of the total value of imports; France ranked fifteenth, accounting for only 1 percent. A large part of these countries' apparel shipments consist of high fashion, more expensive apparel items.

1/ For a more definitive discussion of the MFA, see The Multifiber Arrangement, 1973 to 1980: Report on Investigation No. 332-108 Under Section 332 of the Tariff Act of 1930, . . ., USITC Publication 1131, March 1981.

2/ As of September 1983, they included Brazil, Colombia, Haiti, Hong Kong, Hungary, India, Indonesia, Japan, the Republic of Korea, Macau, Malaysia, Mexico, Pakistan, the Philippines, Poland, Romania, Singapore, Thailand, Yugoslavia, the Dominican Republic, and Sri Lanka.

3/ The limits specify the amount of imports which may enter the United States in a specific category in a designated period, usually 12 months. The limits are subject to change according to the flexibility provisions in the bilateral agreement.

4/ Sec. 204 of the Agricultural Act of 1956 also provides the authority for the United States to enter into textile trade agreements with MFA signatories.

5/ As of September 1983, the countries were Egypt, Czechoslovakia, Greece (an EC member state), Jamaica, Malta, Nicaragua, Peru, Portugal, and Spain.

In 1978, the value of apparel imports from Italy more than doubled over the level in 1963 to almost $194 million. Then, these imports declined to approximately $180 million in 1980, before rising to $210 million in 1982. Apparel imports from France increased steadily from almost $18 million in 1963 to about $150 million in 1978, before declining to $96 million in 1982. These trends in U.S. apparel imports from Italy and France are shown in the following tabulation (in thousands of dollars):

Year	U.S. imports from Italy	U.S. imports from France
1963	95,451	17,765
1967	108,761	21,428
1972	113,187	43,941
1977	146,792	111,619
1978 1/	193,644	149,513
1979 1/	188,018	136,245
1980 1/	179,991	122,294
1981	189,700	98,076
1982 1/	210,244	96,384

1/ Estimated by staff of the U.S. International Trade Commission.

A large part of the Italian shipments consisted of outerwear and undergarments of woven fabrics. However, Italy also exports medium-to-high-quality, fashionable knitwear to the U.S. market. Exports of these items have increased considerably in 1983. Industry sources cited the strength of the U.S. dollar and the U.S. quotas on Far Eastern imports as the impetus for the growth in shipments of this knitwear to the United States. Approximately three-quarters of French shipments consisted of outerwear and undergarments of woven fabrics.

Conditions of competition in the U.S. market

Imports of apparel from France and Italy have accounted for a very small part of total U.S. consumption of these products, (less than 1 percent annually during 1963-82), primarily because these imports consist largely of high fashion and expensive apparel, which is traditionally a small segment of the total U.S. apparel market. Imports from the low-cost Far Eastern countries account for most of the U.S. imports. These imports are composed of products destined for the low-to-medium-priced mass apparel market in the United States. The French and Italian apparel is comparable in quality to U.S. high-fashion apparel and is slightly higher priced. Labor costs for apparel workers in France and Italy, which averaged $6.61 per hour and $6.31 per hour, respectively, in 1980, are higher than the $5.70 per hour paid apparel workers in the United States and significantly higher than the wages paid in the Far East.

The use of brand and designer names has been an important factor in marketing apparel and has grown in importance in the past few years. France and Italy capitalize on their fashion images and on the reputation of their brand and designer names in order to compete more effectively in the U.S. market.

International markets

Some measure of world apparel consumption can be determined from analysis of textile fiber consumption, which is discussed in detail in the section of this report on the international market for textiles. The leading textile fiber consuming markets, in order of volume in 1980, were the United States, the EC, the U.S.S.R., China, Japan, and India. In the EC, the major fiber-consuming countries were West Germany, France, the United Kingdom, and Italy.

Another measure of size of international apparel markets consists of an evaluation of the largest apparel importing countries. The major world markets for apparel imports are the industrialized countries. The United States, Canada, the EC, the European Free Trade Association (excluding Portugal), and Japan, accounted for three-quarters of total world apparel imports in 1981. Although China and India are large fiber-consuming countries, neither country is a large importer of apparel.

The United States was the largest single market in 1981, with apparel imports totaling $8.1 billion. The EC's apparel imports were valued at $17.7 billion in 1981. West Germany was not only the largest EC market, but also the second largest market in the world in 1981. The U.S.S.R. is also a leading apparel market. Its apparel imports totaled about $2.5 billion in 1980, the most recent year with available data. 1/ The leading world markets for apparel and their apparel imports for the years 1973 and 1981 are shown in the following tabulation (in billions of dollars):

Country	1973	1981
United States	$2.17	$8.12
West Germany	2.54	7.18
United Kingdom	.82	2.61
France	59	2.46
U.S.S.R	1.06	1/
Netherlands	.86	2.32
Japan	.57	1.80
Belgium-Luxembourg	.56	1.57
Switzerland	.50	1.39
Sweden	.40	1.15
Hong Kong	.12	.93
Canada	.33	.84
Austria	.20	.77
Italy	.19	.75

1/ Not available.

EC market demand for medium-to-high-priced apparel is principally supplied from EC partner countries, though some, medium-priced apparel comes from Spain, Eastern European countries, and the United States. Basic, low-priced apparel is imported from the low-wage countries of the Far East and the Mediterranean, however, Hong Kong and Korea have been upgrading the quality of their products.

1/ Import data for the U.S.S.R. are not available for 1981.

Consumers' expenditures for apparel in the industrialized countries are related to the general economic climate in each country. During the recession of 1974-75, consumer expenditures for clothing in industrialized countries leveled off. After 1975, expenditures for apparel began an upward trend. However, expenditures in the EC grew more slowly than in other industrialized countries. Then, in 1981, clothing expenditures in the EC actually declined 1.5 percent from the previous year's level. Within the EC market in 1981, expenditures in West Germany and Italy declined 4.5 percent and 5.5 percent, respectively; in France and in the United Kingdom, expenditures grew by 2.5 percent and 3 percent, respectively.

U.S. exports

U.S. exports of apparel increased steadily from $89.8 million in 1963 to $1.1 billion in 1981, and then declined 25 percent to an estimated $846.5 million in 1982 (table B-1). Apparel exports have accounted for roughly 1 to 2 percent of the value of U.S. shipments for the past two decades, except for the year 1963. 1/

A significant portion of U.S. apparel exports in recent years have consisted of cut-up apparel parts, shipped primarily to low-wage countries located near the United States (e.g., Mexico, the Dominican Republic, and Costa Rica) to be shipped back to the United States under TSUS provision 807.00. 2/ U.S. producers' use of the provision 807.00 has increased over the past two decades, and these apparel-part exports have increased, as a share of total exports, from approximately 10 percent in 1963 to about 28 percent in 1982.

On the other hand, major markets for finished U.S. apparel are the industrialized countries, including the United Kingdom, West Germany, and France, Canada, Japan, and Sweden (table B-7). Consumers in these markets have had a relatively greater amount of discretionary income than in developing countries.

In 1982, U.S. apparel exports declined due principally to two factors: (1) shipments of cut-up apparel parts to Mexico and the Dominican Republic declined, due to weak demand for apparel in the U.S. market and, in the case of Mexico, temporary uncertainty associated with the devaluation of the Mexican peso that year; and (2) exports to Canada and the major EC markets declined, due to reduced demand resulting from poor economic conditions there. In addition, the strength of the U.S. dollar has made U.S. goods less attractive.

1/ In 1963, U.S. exports accounted for approximately 5 percent of U.S. shipments.

2/ This provision states that duty on articles assembled abroad wholly or partly with U.S.-fabricated components be applied to the full value of the imported article less than the value of the U.S.-made components. For the most part, the duty is assessed on the value added abroad.

EC exports

Exports of apparel from the EC increased from $954.4 million in 1963 to almost $11.0 billion in 1981. The largest increase, 163 percent, occurred in the 5-year period, 1967-72 (table B-8). More than half of the EC exports were intra-community shipments, with West Germany being the largest single import market. The amount of intra-EC trade has increased over the last two decades, increasing from 49 percent of total EC apparel exports in 1963 to 65 percent in 1981. Leading markets outside the EC were Switzerland, Austria, and the United States, which accounted for only 3 percent of total EC apparel exports in 1981.

During 1967-72, EC exports increased, reflecting the favorable economic conditions of the industrialized countries. Consumer expenditures on clothing in these countries also increased, reflecting higher standards of living and increased disposable income. Consumer demand rose as new and improved technology in synthetic fiber and fabric production occurred. 1/ During 1977-81 the rate of increase in EC exports slowed down, reflecting the poor economic conditions in Western Europe and the United States during this period.

France increased its apparel exports to the world from $156.2 million in 1963 to $1.9 billion in 1981, and accounted for 17 percent of total EC apparel exports in 1981 (table B-9). The largest increase in French exports took place during 1967-72, increasing 240 percent over that of the 1963-67 level. In 1981, just over 55 percent of the French exports went to EC markets; only 5 percent went to the United States. This was a decrease from the U.S. 11-percent share of the French export market in 1963.

Italy is the largest apparel exporting country in the EC and accounted for 39 percent of total EC apparel exports in 1981. Total Italian apparel shipments to world markets, like French exports, showed dramatic growth, increasing from $336.1 million in 1963 to $4.3 billion in 1981 (table B-10). The largest increase, 142 percent, also occurred during 1967-72. Italian exports continued to increase at a rapid rate, 110 percent, during 1972-77, before slowing down to 68 percent during 1977-81. In 1981, 65 percent of Italian exports went to intra-EC markets. Italian shipments sent to the United States declined from 28 percent of Italian apparel exports in 1963 to 4 percent in 1981.

Conditions of competition in international markets

The apparel markets in both the United States and the EC are highly competitive. The United States and EC-member countries are competing with low-wage, Far Eastern suppliers (particularly Hong Kong and Korea) which have upgraded the quality and styling of their merchandise.

The EC member country producers have certain inherent competitive advantages over the U.S. producers competing in the EC market. These include duty-free entry, geographic proximity (which allows for lower transportation costs and ease in evaluating each others markets), and similar style preferences. In the market for high-fashion, expensive apparel, France and

1/ Contracting parties to the General Agreement on Tariff and Trade, International Trade 1968/69, p. 71.

Italy, because of their reputations as world fashion leaders, have a considerable advantage over the United States. In the basic, price-intensive apparel market, the Far Eastern, Mediterranean, and Eastern European countries can offer apparel at prices below that of either the United States or the EC member countries. The United States best competes in the EC market with medium-priced merchandise that is designed for U.S. taste, or that benefits from efficient, large-scale U.S. production. Examples of popular U.S. apparel products are jeans, T-shirts, and sweatshirts with American logos.

Automatic Data Processing Equipment, Peripherals, and Parts

Description and uses

Automatic data processing equipment, peripherals, and parts are items used in the processing of information and in the manufacture of devices which process information. Automatic data processing machines (computers) are automatic electronic machines capable of accepting input data, and performing operations on these data according to a set of instructions known as a program. They use peripherals such as paper and magnetic tape units, printers, magnetic disc and drum storage devices, and remote terminals, to input data, to store data, and to output data. Parts of computers include basic mechanical and electrical components and also subassemblies of these components. In many cases, the subassemblies require relatively little additional assembly.

Computers and automatic data processing machines are used by virtually every major U.S. firm. They are also used extensively by the Department of Defense and other Federal, State, and local government agencies, as well as by public utilities and educational institutions.

In recent years, demand for remote terminals, minicomputers, microcomputers, computer-controlled testing and manufacturing equipment, and data modems has increased. With the rapid development of integrated circuits, which can consist of a complete computer (less power supply and input and output devices) on a piece of silicon less than one-quarter inch square, computers and automatic data processing machines are undergoing a revolutionary change in size and versatility.

U.S. industry profile

The U.S. automatic data processing machine, peripheral, and parts industry is composed of approximately 1,000 firms which employed an estimated 340,000 workers in 1982 (table B-1, app. B). The five largest firms are estimated to account for over 75 percent of the total value of shipments. Because of the complexity of the machines and the diversity of the uses to which they are put, workers in the computer industry tend to be among the most highly skilled in all manufacturing. These skills range from those of assembly line workers to design engineers. Employment has grown at approximately 10 percent per year during 1978-81; however, the rate of growth was considerably lower in 1982 because of the business downturn.

To the extent that any loss of domestic and/or international market share results from targeting practices, the corresponding absence of each $1 million in production not undertaken by U.S. automatic data processing manufacturers would translate into an estimated 38 workers displaced in all sectors of the U.S. economy (based on 1982 production/employment relationships), according to the staff of the U.S. International Trade Commission, using the BLS input-output model, as seen in the following tabulation:

Industry sector	Displacement of employment
	(Number)
Automatic data processing	18
Other manufacturing	14
All other	13
Total	45

EC industry profile

There are several hundred firms producing automatic data processing machines, peripherals, and parts in the EC; however, in each EC country there are no more than one-half dozen firms which account for the bulk of shipments, and these include subsidiaries of U.S. manufacturers.

The major indigenous European producers of computers probably do not number more than 25. The estimated value of shipments for all EC producers was $14.2 billion in 1982. The estimated number of employees was 165,000. The estimated growth rate for employment was 8 percent per year during 1978-82.

U.S. market

The U.S. market for computers, peripherals, and parts includes every type of business establishment and household in the United States. Until about 1977, the major markets for computers and data processing machines were large industrial concerns, the military, and educational institutions. However, with the introduction of personal computers, the market has expanded to include small businesses and, to a limited extent, individuals in all types of businesses that utilize such computers as a desk-top aid; this is expected to be the case in the foreseeable future as well.

The domestic computer market is dynamic in that it is expanding rapidly. Many new firms have joined the industry, and there have been a number of exits as firms have gone bankrupt or decided that there is too much competition to allow for acceptable profit levels. Most of the exits have been in the personal and home computer segments of the market.

U.S. shipments

U.S. producers' shipments of automatic data processing machines peripherals, and parts increased from $17.6 billion in 1978 to $33.9 billion in 1982, increasing by 93 percent overall, or 18 percent per year (table B-1). Apparent U.S. consumption increased from $14.2 billion to $27.3 billion during the period, representing an increase of 92 percent overall, or 18 percent per year; essentially the same percentage increase as that for shipments.

Large-scale computer systems are generally marketed through company-owned outlets or by direct sales forces. Such systems may be sold or leased to the user. Pricing of such systems is usually done on the basis of negotiations which stipulate terms such as warranties, performance, guarantees, and maintenance. Smaller computers, such as personal computers, and peripherals are marketed through both company-owned outlets and independent distributors. Pricing of small computer systems varies with the number and kind of peripherals included in the system. Price lists for the computer and associated peripherals are maintained by the outlets and, generally, include provisions for quantity discounts. Parts are purchased by data processing original equipment manufacturers and, in many cases, are supplied on an intracompany basis.

U.S. imports

U.S. imports of automatic data processing machines, peripherals, and parts increased from $755 million in 1978 to $2.3 billion in 1982, increasing by 204 percent overall, or 32 percent per year (table B-1). Imports of these three product groups have grown at different rates. During 1978-82, imports of automatic data processing machines grew at a rate of 16 percent per year; imports of peripherals at 33 percent per year; and imports of parts at 38 percent per year. In 1982, ADP machine imports were $336 million, peripheral imports were $639 million, and imports of parts were $1.3 billion. Japan was the principal source of imports in 1982.

Imports of automatic data processing machines, peripherals, and parts from the EC have fluctuated, rising from $242 million in 1978 to $302 million in 1979, then declining to $284 million in 1981 before rising to $316 million in 1982.

The principal sources of U.S. imports from the EC have been the United Kingdom, West Germany, and France. These three countries accounted for 71 percent of all U.S. imports from the EC in 1982. EC imports of automatic data processing machines, peripherals, and parts as a share of total imports, declined from 32 percent in 1978 to 14 percent in 1982. As a share of apparent U.S. consumption, EC imports were less than 2 percent during the period. The ratio of total imports to apparent U.S. consumption increased from 5 percent in 1978 to 8 percent in 1982.

Conditions of competition in the U.S. market

The U.S. market is principally served by U.S. manufacturers. U.S. manufacturers compete generally on the basis of the overall capabilities of the system in large-scale computer system placements. For such systems some manufacturers may offer better delivery times but less maintenance; others may offer longer delivery times but better system software support. Price also determines which manufacturer will win a contract to supply a computer system. Competition in personal computers is much more intense, with many new firms introducing their own particular model. Because of size limitations (i.e., personal computers tend to be desk-top models) many of these computers have similar characteristics, and price is a more important determinant in the purchase decision than it is for large-scale computer systems, especially if quantity discounts are available. Competition in the peripheral market is generally on the basis of price and features. For example, computer printers operate at various speeds with the higher speeds commanding higher prices for a given print quality. Similarly, remote computer display terminals vary in price according to the resolution of the display tube and the reliability of the keyboard. Parts, however, are of a more homogeneous nature.

International markets

Principal world markets for automatic data processing machines, peripherals, and parts are the United States, the EC, and Japan. Other major industrial countries such as Canada, Switzerland, and Sweden are also large markets for these products. Worldwide demand for these products is a function of the need to process vast amounts of information generated by business, government, and scientific activity. Thus, demand is especially strong in the industrial countries.

The U.S.-based industry currently enjoys a technological lead, principally in automatic data processing machines. U.S. producers of personal computers appear to have technological advantages also, however, inexpensive home computers, which may or may not be marketed with video games, tend to be produced in low-wage-rate countries because the technology level of such items is relatively low and easily transferred to offshore locations.

The EC-based industry has a number of large firms capable of producing automatic data processing machines which are competitive with U.S.-produced machines; however, the U.S. industry still enjoys a competitive advantage. Also, U.S. subsidiaries are among these large automatic data processing machine producers in Europe, and this has fostered the transfer of technology from the United States to the EC with trade in these products following this transfer.

U.S. exports

U.S. exports of automatic data processing machines, peripherals, and parts increased from $4.1 billion in 1978 to $9.0 billion in 1982, or by an increase of 116 percent, or 21 percent per year. Based on United Nations export data, 46 percent of U.S. exports of these products went to the EC in 1981 (table B-11). The next largest markets were Canada, which accounted for 12 percent of U.S. exports, and Japan, which accounted for 8 percent. Comparable figures for U.S. exports in 1972 show that 37 percent went to the EC; 23 percent to Canada; and 10 percent to Japan. This indicates that from 1972 to 1981 the EC became a relatively more important market for U.S. exports. In fact, in 1981, the United Kingdom was the largest single country market for U.S. exports, surpassing Canada which had been the largest market in 1972 and 1977.

EC exports

Total exports of automatic data processing machines, peripherals, and parts increased from $1.5 billion in 1972 to $5.4 billion in 1981, according to United Nations data, increasing by 259 percent for the period, or 15 percent per year (table B-12). During 1972-81, intra-EC trade increased from 58 percent of the total to 64 percent. In 1981, the principal export markets outside of the EC were Spain, Switzerland, and the United States, accounting for approximately 4 percent of total exports each.

France.--French exports increased from $289 million in 1972 to $900 million in 1981, representing an increase of 212 percent, or 13 percent per year (table B-13). In 1981, the top five export markets for France were all EC countries; in fact, 59 percent of these French exports went to other EC countries. The United States absorbed 4 percent of French exports in 1981.

United Kingdom.--The United Kingdom exports increased from $312 million in 1972 to $1.3 billion in 1981, representing an increase of 305 percent, or 17 percent per year (table B-14). In 1981, 61 percent of the United Kingdom's exports went to other EC countries; the United States, which accounted for 5 percent of United Kingdom exports, was the fifth ranking export market.

West Germany.--Exports from West Germany increased from $580 million in 1972 to $1.5 billion in 1981, representing an increase of 162 percent overall, or 11 percent per year (table B-15). In 1981, 61 percent of West German exports went to other EC countries. Of the top five export markets, only Switzerland, which ranked fifth, was a non-EC country. Exports to the United States accounted for only 4 percent of the total.

Conditions of competition in international markets

U.S. products appear to compete well in world computer markets. Such products enjoy good worldwide reputations in main frame systems for hardware, software, and support. U.S. minicomputer and microcomputer systems are also quite competitive, although they do face competition from a variety of EC-based sources and Japan. A similar situation exists with regard to peripherals. One reason for the competitive position enjoyed by U.S. firms is the large number of foreign subsidiaries located in major EC countries and the wide range of products manufactured by U.S.-based firms. EC-based firms compete well with U.S. firms in certain product lines, but do not produce as wide a range of products as U.S. firms.

Automobiles and Trucks

Description and uses

The products covered in this section include new and used passenger automobiles, and all automobile trucks and truck tractors. Buses, special-purpose vehicles such as cement mixers and mobile cranes, snowmobiles, golf cars, and other miscellaneous motor vehicles are excluded from the discussion, as are bodies, chassis, and motor-vehicle parts such as engines, transmissions, and the like. New automobiles and mediumweight and heavyweight trucks (including cab/chassis) 1/ currently represent virtually all of the imports of motor vehicles from the European Community.

Mediumweight trucks are usually defined by the motor-vehicle industry as trucks having a gross-vehicle-weight (GVW) rating of over 10,000 pounds but not over 19,500 pounds, and heavyweight trucks are those with a GVW rating of over 19,500 pounds. Pratically all of these trucks are used for commercial purposes and not for personal transportation. Trucks with a GVW rating of less than 10,001 pounds are usually defined as lightweight trucks. Most of the lightweight trucks are either compact/standard-sized pickup trucks or van-type vehicles used for personal transportation.

U.S. industry profile

Automobiles and trucks are normally distributed through retail dealer outlets located throughout the United States. In the case of Government or some large-fleet purchasers, the vehicles typically are shipped directly to the buyer, but the percentage is relatively small in relation to total domestic sales. At the producer level, the vehicles are seldom held in inventory, they are normally shipped to the retail dealer within a few days after production.

There are currently three U.S.-owned automobile manufacturers, one primarily U.S.-owned manufacturer, and two foreign-owned subsidiaries operating in the United States. The top three automobile producers (all U.S.-owned) accounted for about 95.0 percent of total U.S. production in 1983. In the case of trucks, there are 6 principal U.S. manufacturers and approximately 10 small producers. 2/ In 1983, the six principal truck manufacturers represented about 97.0 percent of U.S. truck production. Some manufacturers purchase their chassis from larger firms and install custom bodies; thus they are not considered producers. (Also, many manufacturers of heavyweight trucks purchase large components such as diesel engines or transmissions from outside suppliers in addition to producing their own engines and transmissions.)

1/ A cab/chassis includes virtually all of the components of a truck except the cargo body, which is normally attached to the chassis behind the cab. Lightweight cab/chassis are classified as "unfinished trucks," and mediumweight and heavyweight cab/chassis are classified as parts of trucks.

2/ In 1983, a Japanese motor-vehicles manufacturer began production of a compact pickup truck in Tennessee.

The level of skill of production workers in the motor-vehicle industry ranges from low, or unskilled assembly operators, to highly skilled machinists. In addition, some tasks that were traditionally performed by assembly employees are now accomplished using robots. These robots are used primarily for welding and painting operations, but it is likely that the use of industrial robots will continue to expand into other areas as they become more sophisticated and the initial cost declines.

Employment of all workers and of production workers in the motor-vehicle industry (SIC No. 3711) was as follows (in thousands of workers): 1/

Year	All workers	Production workers
1960	361.2	273.0
1963	360.5	269.4
1967	401.0	296.8
1972	415.2	304.9
1977	443.0	329.6
1978	469.7	349.1
1979	463.0	340.8
1980	368.1	252.8
1981	358.7	251.9
1982	321.3	223.3
1983	397.5	295.2

The number of workers employed in this industry reached its highest level of 469,700 workers in 1978, steadily declined in each of the following years to 321,300 workers in 1982, and then increased to 397,500 workers by the end of 1983.

To the extent that any loss of domestic and/or international market share results from targeting practices, the corresponding absence of each $1 million in production not undertaken by U.S. automobile and truck manufacturers would translate into an estimated 23 workers displaced in all sectors of the U.S. economy (based on 1982 production/employment relationships), according to the staff of the U.S. International Trade Commission, using the BLS input-output model, as shown in the following tabulation:

Industry sector	Displaced employment
	Number
Automobile and trucks	8
Other manufacturing	8
All other	7
Total	23

1/ Based on U.S. Department of Labor data.

EC industry profile

The primary motor-vehicle producing countries in the European Community are West Germany, France, the United Kingdom, and Italy. In addition, there are motor-vehicle production and/or assembly operations in Belgium and the Netherlands. The following tabulation, compiled from data published by the Motor Vehicle Manufacturers Association, shows production of automobiles and trucks for the four major EC motor-vehicle producers in specified years 1963 to 1983 (in thousands of units):

Year	Automobiles	Trucks	Total
1963-------	6,646	911	7,557
1967-------	7,062	869	7,931
1972-------	10,168	1,080	11,248
1977-------	9,650	1,185	10,835
1981-------	8,402	1,087	9,489
1982-------	8,723	1,114	9,837
1983 1/----	8,790	1,124	9,914

1/ Estimated.

Production of automobiles and trucks in the four major EC vehicle-producing countries increased from 7.6 million in 1963 to 11.2 million in 1972, and remained relatively constant during 1981-83 at about 9.8 million units. After reaching a peak in 1972, production dropped due in part to the 1973-74 OPEC oil embargo and the resulting increase in petroleum prices. By 1983, production had not yet recovered to early 1970 levels, due to another petroleum shortage in 1980 and the general worldwide recession of 1981-83.

Table 48 presents the number of automobiles and trucks produced by West Germany, France, the United Kingdom, and Italy for specified years 1963 to 1983.

Table 48.--The number of new autombiles and trucks produced by four principal EC manufacturers, by specified years, 1963-83

Product and year	West Germany	France	United Kingdom	Italy	Total
Automobiles:					
1963----------------------	2,413	1,520	1,608	1,105	6,646
1967----------------------	2,295	1,776	1,552	1,439	7,062
1972----------------------	3,522	2,993	1,921	1,732	10,168
1977----------------------	3,790	3,092	1,328	1,440	9,650
1981----------------------	3,578	2,612	955	1,297	8,723
1983 1/-------------------	3,800	2,650	990	1,350	8,790

Table 48.--The number of new autombiles and trucks produced by four principal EC manufacturers, by specified years, 1963-83 (continued)

Product and year	West Germany	France	United Kingdom	Italy	Total
Trucks:					
1963	240	213	386	72	911
1967	172	230	367	100	869
1972	267	332	378	103	1,080
1977	275	412	359	139	1,185
1981	297	405	217	168	1,087
1982	319	370	269	156	1,114
1983 1/	325	336	300	163	1,124
Total:					
1963	2,653	1,733	1,994	1,177	7,557
1967	2,467	2,006	1,919	1,539	7,931
1972	3,789	3,325	2,299	1,835	11,248
1977	4,065	3,504	1,687	1,579	10,835
1981	3,875	3,017	1,172	1,425	9,489
1982	4,080	3,147	1,157	1,453	9,837
1983 1/	4,125	2,986	1,290	1,513	9,914

1/ Partially estimated by the staff of the U.S. International Trade Commission.

Source: Compiled from data published by the Motor Vehicle Manufacturers Association, except as noted.

The end users of European motor vehicles, the level of skill involved in production operations, and the distribution channels for vehicles in Europe are essentially the same as those in the United States. There are 18 primary producers of automobiles and 14 producers of trucks in the EC. The number of automobile and truck manufacturers in each major producing country, based upon data compiled by Ward's Automotive Yearbook, are as follows: 1/

Country	Number of automobile producers	Number of truck producers	Total
West Germany	7	6	13
United Kingdom	6	6	12
Italy	6	5	11
Belgium	5	2	7
France	2	3	5
The Netherlands	1	3	4
Total	27	25	52

1/ The same company may produce automobiles or trucks in more than one country; also, many companies that produce automobiles also produce trucks.

U.S. market

In the United States, demand for automobiles and trucks is concentrated in densely populated areas, primarily urban. Lightweight trucks previously were used primarily in rural areas. When used in urban areas their usage was mostly commercial. However, during the last 10 to 15 years, vans and pickup trucks have become popular in urban and suburban areas, where they are used for personal transportation, as well as for commercial purposes.

At one time, brand loyalty and price were the primary factors considered in the purchase of an auto or truck. But today's consumer is more concerned with quality, mechanical reliability, and fuel efficiency than about brand loyalty. The tendency to purchase the same make as the previously owned vehicle is still an important factor, but it is not as important as it was during the 1940's through the 1960's.

Until the early 1960's, virtually all automobiles and lightweight trucks produced domestically were similar in size. U.S. manufacturers began producing smaller automobiles in significant numbers in 1959 and compact trucks in 1980. All three major U.S. lightweight truck manufacturers currently produce compact trucks in the United States, and one foreign-affiliated firm currently produces a compact pickup truck in the United States.

Mediumweight and heavyweight trucks have changed very little during the last 10 to 15 years in either body style or size. During the last 5 years, many purchasers of mediumweight trucks have switched from gasoline engines to diesel engines. Virtually all heavyweight trucks, especially those with a GVW rating of over 33,000 pounds are now diesel powered. Practically all imported mediumweight and heavyweight trucks and cab/chassis, except those from Canada, are equipped with diesel engines.

Automobiles are classified principally by size: subcompact, compact intermediate, standard, and luxury. In terms of size, consumer preferences have changed during the last 5 years. The following tabulation, based on data compiled from Automotive News, presents retail sales of domestically produced automobiles, by sizes, for 1978-83 (in percent):

Year	Subcompact	Compact	Intermediate	Standard 1/
1978-----	10.7	27.8	32.3	29.2
1979-----	16.4	26.8	30.4	26.4
1980-----	21.0	28.6	29.2	21.2
1981-----	23.5	27.8	28.0	20.7
1982-----	23.1	24.3	26.3	26.3
1983-----	29.8	13.6	33.1	23.5

1/ Includes luxury models.

The above tabulation indicates a significant shift in demand toward subcompact models and away from the other sizes during 1978-82. Due to the stabilization of fuel prices during late 1982 and 1983, some consumers switched from compact automobiles to intermediate models in 1983.

U.S. shipments

U.S. shipments of automobiles and trucks for selected years, compiled from statistics supplied by the Motor Vehicle Manufacturers Association, were as follows:

Year	Automobile	Truck and bus	Total
1963----------	7,638	1,463	9,101
1967----------	7,437	1,539	8,976
1972----------	8,824	2,447	11,271
1977----------	9,201	3,442	12,643
1978----------	9,165	3,706	12,871
1979----------	8,419	3,037	11,456
1980----------	6,400	1,667	8,067
1981----------	6,255	1,701	7,956
1982----------	5,049	1,905	6,954
1983----------	6,780	2,424	9,204

Automobile shipments reached the highest level in 1973 when 9.7 million units were shipped, and the peak year for truck and bus shipments during 1954-82 was 1978, when 3.7 million units were shipped. U.S. shipments of automobiles and trucks declined each year from 1978-82, due principally to the increase in the price of petroleum and the recessionary trends over the past years. However, U.S. shipments of automobiles, trucks, and buses for 1983 increased by 2,250,000 units compared with 1982, due to the recovery of the U.S. economy during late 1982 and 1983.

U.S. imports

U.S. imports of automobiles and trucks increased from $450 million in 1963 to $20.2 billion in 1982 (table B-1, app. B). The principal source of imports in 1963 was West Germany from which the United States imported 301,441 automobiles and trucks, valued at $308 million. The primary source in 1982 was Japan from which the United States imported about 2.2 million automobiles and lightweight trucks, valued at $11.1 billion. Imports of automobiles and trucks from West Germany during 1982 remained at almost the same level as that of 1963, in terms of units. In 1982, the United States imported 259,385 automobiles, valued at $3.2 billion, and 373 cab/chassis, valued at $5.2 million. Table 49 presents the number of automobiles, trucks, and cab/chassis imported from the six principal sources of U.S. imports, by specified years 1964 to 1982.

Imports of automobiles accounted for over 98.5 percent of the value of motor vehicles imported from the EC during 1963-82. In 1963, most of the automobiles imported from the EC (primarily West Germany, France, and the United Kingdom) were low-priced economy models or small inexpensive sports cars. Although the number of automobiles imported from Europe in 1982 was about the same as the number imported in 1963, the model mix has changed. The EC lost virtually all of the lower priced automobile market to the Japanese

Table 49.--New automobiles, trucks, and cab/chassis imported by 6 principal sources and all other countries, by specified years, 1964-82 1/

(In millions of units)

Year	Japan	Canada	West Germany	United Kingdom	Sweden	Italy	All Other 2/	Total
1964	16	9	365	77	18	10	41	3/ 536
1967	81	455	472	68	42	17	29	1,165
1972	857	1,014	677	72	64	64	70	2,818
1977	1,570	1,139	423	57	39	55	36	3,319
1978	1,931	1,202	416	54	56	70	38	3,767
1979	2,015	950	495	47	66	72	37	3,682
1980	2,473	848	338	32	61	46	65	3,863
1981	2,367	840	4/ 234	12	68	24	51	3,596
1982	2,156	966	4/ 260	13	90	11	59	3,555

1/ Includes cab/chassis from Japan, Canada, West Germany, Italy, and Brazil.
2/ Primarily France, Belgium, and Brazil.
3/ Partially estimated by staff of the U.S. International Trade Commission.
4/ Data for 1981-82 do not include vehicles assembled in foreign trade zones.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

during 1975-82 due to the European models' higher price and quality problems. Most European automobiles imported into the United States in 1983 were either luxury automobiles (those having a retail price of more than $15,000), sports-specialty models that are offered by no other country, or compact intermediate-size automobiles that were larger than most Japanese models.

The following tabulation, based on official statistics of the U.S. Department of Commerce and the Motor Vehicle Manufacturers Association, shows the ratio, in terms of units and value, of imports of automobiles (total and EC) to U.S. consumption (in percent): 1/

Year	Ratio of imports to consumption		Ratio of imports from EC to consumption	
	Units	Value	Units	Value
1963	6.6	3.5	6.0	2.9
1967	12.5	8.9	7.0	3.9
1972	22.8	18.2	8.0	5.4
1977	24.7	23.6	4.9	5.7
1978	26.4	23.5	5.0	5.7
1979	28.2	25.6	6.0	6.8
1980	35.0	31.6	5.2	7.7
1981	33.3	31.2	3.7	6.1
1982	38.5	37.2	4.4	7.3

In 1963, less than 4 percent of U.S. consumption of automobiles and trucks, in terms of value, was accounted for by imports, but by 1982 the percentage had climbed to 37.2 percent. The ratio of imports to consumption (in terms of units) from the EC during 1963-82 reached a peak of 8.0 percent in 1972, then declined to its lowest point of 3.7 percent in 1981 before rising to 4.4 percent in 1982. However, if EC import penetration is measured in terms of value, a peak of 7.7 percent was reached in 1980, then declined to 6.1 percent in 1980 before rising to 7.3 percent in 1982.

Most of the decrease in the import to consumption ratio for EC imports, (in terms of units) can be attributed to a decrease in U.S. demand for EC-produced small, inexpensive automobiles. During the early 1970's, U.S. consumer demand for small imported fuel-efficient automobiles switched from European-built automobiles to Japanese automobiles. However, the European producers were able to capture an additional share of the U.S. luxury automobile market during 1977-82, causing a change in the model mix from predominantly low-priced subcompacts to expensive compact/intermediate size sedans. Thus, the import penetration (in terms of units) fell from 6.0 percent in 1973 to 4.4 percent in 1982, but increased from 2.9 percent to 7.3 percent (in terms of value) during the corresponding period.

1/ Includes duty-free imports from Canada.

Conditions of competition in the U.S. market

Prices of European trucks are competitive with U.S.-produced trucks, and prices of some European automobiles are competitive with U.S.-produced automobiles; other European automobiles are priced substantially higher. The retail prices of automobiles imported from the EC range from about $5,000 for one of the few subcompact sedans still imported, to over $160,000 for a limited production luxury convertible imported from the United Kingdom. The average retail price of a European automobile in 1983 was over $20,000, making it price competitive with only the most expensive U.S. luxury automobiles.

According to consumer surveys conducted by consumer magazines, independent survey firms, and professional engineering associations, the automobile most frequently mentioned as having the highest perceived quality rating is produced in West Germany. However, many automobiles produced in Europe received low ratings, many below those of U.S.-built automobiles. In general, European automobiles are perceived to be about equal in terms of safety and passenger comfort when compared with U.S.-produced automobiles. However, availability of parts and cost of maintanence were judged to be inferior to U.S. models in these surveys.

International markets

Prior to 1980, the United States was the dominant producer of motor vehicles in the world, followed by the EC. However, in 1980, Japanese motor-vehicle production exceeded that of both the United States and the EC, as shown in the following tabulation sourced from data compiled by the Motor Vehicle Manufacturers Association (in thousands of units):

Year	United States	European Community 1/	Japan
1963	9,108	7,557	1,263
1967	9,023	7,931	3,146
1972	11,310	11,248	6,294
1977	12,702	10,835	8,515
1980	8,009	10,180	11,043
1981	7,943	9,489	11,180
1982	6,986	9,837	10,737
1983 2/	9,100	9,900	11,100

1/ Includes 4 major motor-vehicle-producing countries.
2/ Estimated by the staff of the U.S. International Trade Commission.

The success of U.S. motor-vehicle manufacturers has been due primarily to their success in the U.S. market. Little emphasis has been placed on exporting, except to Canada. The primary reason the major U.S. motor-vehicle maufacturers have not pursued a more aggressive export policy is that they have production/assembly facilities in most of the major world markets, except Japan. The two largest U.S. motor-vehicle manufacturers are both major producers in the EC, principally West Germany, Belgium, and the United Kingdom. No U.S.-owned firm currently produces motor vehicles in Italy or France, although one U.S. producer owns about 15 percent of a French firm.

The following tabulation, compiled from Ward's Automotive Year Book, 1983, lists the production of motor vehicles in 1981 and 1982 for the major motor-vehicle manufacturing industrialized countries (in thousands of units): 1/

Country	1981	1982
Japan	11,180	10,737
United States	7,942	6,985
West Germany	3,897	4,062
France	3,019	3,149
Italy	1,433	1,453
Canada	1,323	1,236
United Kingdom	1,184	1,156
Spain	987	1,069
Belgium	894	997
Brazil	780	861
Mexico	597	472
Australia	392	409
Sweden	314	345
Republic of Korea	133	163
Portugal	119	118
All others	42	373
Total	34,636	33,585

A major indication of demand for motor vehicles is the number of motor vehicles registered in a country. The following tabulation, sourced from the Motor Vehicle Manufacturers Association, shows 1980 registrations of automobiles, and trucks and buses, by areas (in thousands of units):

Area	Automobiles	Trucks and buses	Total
North and Central America	136,450	39,088	175,538
Europe	124,200	21,330	145,530
Asia	31,883	20,368	52,251
South America	14,234	4,553	18,787
Africa	7,414	2,043	9,457
Oceania	6,332	3,181	9,514
World total	320,513	90,563	411,076

1/ Data do not include Soviet-bloc production.

The preceding tabulation shows that North and Central America and Europe are currently the major world market areas for motor vehicles. However, these two markets, along with Japan, have a relatively low-predicted growth rate for the next decade compared with other areas of the world.

U.S. exports

U.S. exports of automobiles and trucks increased from $550 million in 1963 to peak at $5.8 billion in 1981 (table B-16). In 1963, the principal export market for U.S.-produced automobiles and trucks was Mexico, followed by Venezuela and Canada. However, since 1965, Canada has been the principal market for U.S. vehicles. In fact, automobile and truck exports to Canada accounted for more than 60 percent of total U.S. exports during each of the last 5 years. In 1982, the category "not disclosed" was the second leading market for U.S. exports; these were primarily trucks and truck tractors for military use in various countries throughout the world. Kuwait, Venezuela, Mexico, Colombia, and Japan represented the other major markets for U.S. exports of automobiles and trucks.

Of the top 10 markets for U.S. motor vehicles, the value of U.S. exports increased in 5 of the areas, and decreased in the other 5 areas when comparing the value in 1978 with that of 1982. The decline in exports during the last 3 years was caused by a decrease in worldwide demand for U.S. vehicles brought about chiefly by the worldwide recession of 1980-82. Third-world developing countries, major purchasers of U.S. vehicles, have been especially hard hit by the recession.

EC exports

EC exports of automobiles and trucks increased from $3.4 billion in 1963 to $34.6 billion in 1981 (table B-17). The principal export markets for EC-produced motor vehicles were countries within the EC, the United States, Switzerland, Austria, and Nigeria. In 1981, the EC exported automobiles valued at $27.4 billion and trucks valued at $7.2 billion.

France.--Exports of automobiles and trucks from France increased from $560 million in 1963 to $6.7 billion in 1981 (table B-18). Italy, West Germany, the United Kingdom, and Nigeria were the four leading markets for these vehicles in 1981. Italy and West Germany had been the principal markets for French motor-vehicle exports since 1963, but exports to Nigeria grew in importance, rising from less than $4 million in 1963 to over $535 million in 1981.

West Germany.--Exports of motor vehicles from West Germany increased from $1.5 billion in 1963 to $17.1 billion in 1981 (table B-19). The principal export markets for West German motor vehicles in 1981 were the United States, Belgium/Luxemburg, and Italy. These three areas accounted for $6.7 billion, or 40 percent, of West Germany's total exports for 1981.

Conditions of competition in international markets

Both the U.S. and EC motor-vehicle producers have lost market share to Japanese motor-vehicle producers over the past 20 years. Although U.S. manufacturers established assembly plants in many of the EC countries, Mexico, South Africa, South America, and Australia, (some of the large EC producers also built plants in other areas of the world), Japanese producers concentrated most of their production/assembly operations within Japan.

In the EC, U.S. motor-vehicle subsidiaries have been very successful financially during the last two decades. In 1980 when U.S. motor-vehicle companies posted a 4.3-billion dollar loss, their EC operations were generally profitable. Output of U.S. motor-vehicle manufacturers in the EC and other countries of the world has remained relatively constant during the last 5 years compared with EC-owned motor-vehicle producers. However, the increased penetration of Japanese automobiles and trucks has resulted in lost sales for both U.S. and EC motor-vehicle producers. One major U.S. producer recently sold most of its European operations due to financial difficulty in the North American market, but still owns 15 percent of a major French automobile and truck manufacturer.

U.S. motor-vehicle producers operating in the EC produce vehicles that are price competitive with comparable vehicles produced by EC-owned firms. The two major U.S-owned firms produce a wide variety of makes and models of automobiles and trucks that compete effectively with other EC-owned firms throughout Europe, though the U.S.-owned firms do not appear to have an edge in either technology or quality.

U.S. subsidiaries in the EC offer various models that meet European consumer preferences and service the region through local production. Thus, very few automobiles or trucks that are manufactured in the United States or Canada are exported to the EC. Most European drivers demand firmer riding, better handling automobiles than those produced in the United States due to different driving habits and type of highways. In addition, safety and emission standards are different from those in the United States, and this would require some modification of U.S.-built automobiles if imported into the EC. EC motor-vehicle industry productivity rates vary from country to country. Productivity rates in West Germany, Belgium, and France are about equal to U.S. rates, whereas rates in the United Kingdom and Italy are believed to be somewhat lower than that of the United States. The average labor costs for Belgium and West Germany are about equal to U.S. costs, and rates in France, the United Kingdom, and Italy are lower than those in the United States.

Coal

Description and uses

Coal is a solid, brittle, combustible, carbonaceous rock composed of carbon, hydrogen, oxygen, nitrogen, sulfur, and small amounts of other materials ranging from arsenic to zirconium. Coal originated from decayed plant remains which were compressed over vast spans of time to produce the different ranks of coal:

(1) Anthracite - a hard, jet black coal with a high luster used for generating electricity and space heating;

(2) Bituminous - the most common coal, also known as soft coal, it is dense and black, often with well-defined bands of bright and dull material visible, used for generating electricity, making coke, and for space heating;

(3) Sub-bituminous - a type of coal having a dull black color, used for generating electricity and space heating; and

(4) Lignite - a brownish black coal with a high-moisture content, used for generating electricity.

The resulting coalbeds or seams are interlayered between beds of sandstone, shale, and limestone. These coal seams range in thickness from less than one inch to more than 100 feet.

The primary use of coal is as a fossil fuel, but another important use for coal is the production of coke and coal byproducts such as crude coal tar, coke oven gas, light oil, and ammonia. About 92 percent of the coke produced is used in blast furnaces in the production of steel. About 7 percent of the coal tar produced is used as fuel and 93 percent is further refined into tar acid oil, pitch, and other products. Tar acid oil is distilled to produce various chemical derivatives and pitch is used for waterproofing, roofing, and paving.

U.S. industry profile

The coal industry is composed of landowners, mining companies, equipment suppliers, and transportation companies. The large, integrated coal companies dominate the market. Approximately 15 of the largest coal companies control more than half of total U.S. coal output. 1/ The crude petroleum/natural gas companies' share of total coal production increased from about 2 percent in the early 1960's to 23 percent by the 1970's and 1980's. 2/

Coal is mined in 26 States, with Kentucky accounting for 25 percent of total coal production in 1982; West Virginia, 21 percent; Wyoming, 18 percent; Pennsylvania, 13 percent; Illinois, 10 percent; Virginia, 7 percent; and Ohio, 6 percent. The method used to mine the coal depends on the terrain and depth of the coal. Underground mining is required when the coal lies deeper than

200 feet and surface or strip mining is used when the coal is located less than 200 feet deep. Because surface mining is more easily mechanized, more coal has been obtained from surface mining than from underground mining in the United States since the 1970's.

The primary consumers of coal are electric utility companies which account for about 82 percent of total U.S. consumption. The second largest coal users are coke producers, accounting for about 8 percent of U.S. consumption, and other miscellaneous industrial users account for the remaining 10 percent.

After it is mined, coal is shipped to preparation plants where its quality is upgraded to meet consumer requirements. About 50 percent of the coal is shipped via railroads to electric utility plants. Trucks, barges, and ships transport coal and relatively small amounts are delivered by slurry pipelines to consumers.

The U.S. coal industry employs a large number of relatively low-skilled laborers. There were about 4,098 mines producing coal in 1982 compared with 4,140 such mines in 1981, 3/ and 4,703 in 1978. 4/ In 1982, 217,117 miners were employed by the coal industry, representing a decrease of 5.3 percent from the 229,302 miners in 1981. 5/ The following tabulation shows the total number of underground and surface mines in the United States and the number of employees from 1978 to 1982: 6/

Year	Underground		Surface		Total	
	Mines	Employment	Mines	Employment	Mines	Employment
1978	1,926	158,877	2,777	77,624	4,703	236,501
1979	1,917	151,889	2,408	75,408	4,325	227,297
1980	1,887	150,685	2,082	77,884	3,969	228,569
1981	2,020	151,795	2,120	77,507	4,140	229,302
1982	1,991	141,239	2,107	75,878	4,098	217,117

1/ Richard A. Schmidt, Coal in America, McGraw-Hill Publications Co., 1979, p. 146.
2/ Ibid.
3/ U.S. Department of Energy, Coal Production-1982, September 1983, p. 1.
4/ U.S. Department of Energy, Coal Production-1978, Apr. 30, 1981, p. 1.
5/ U.S. Department of Energy, Coal Production-1979, Apr. 30, 1981, pp. 3-4; Coal Production-1981, December 1982, pp. 1 and 47; and Coal Production-1982, September 1983, pp. 1 and 49.
6/ Ibid.

To the extent that any loss of domestic and/or international market share results from targeting practices, the corresponding absence of each $1 million in production not undertaken by U.S. coal producers would translate into an estimated 17 workers displaced in all sectors of the U.S. economy (based on 1982 production/employment relationships), according to the staff of the U.S. International Trade Commission, using the BLS input-output model, as seen in the following tabulation:

Industry sector	Displaced employment
Coal	9
Other manufacturing	3
All other	5
Total	17

EC industry profile

The European Community imports significant amounts of coal and coke to be used for fuel and other industrial uses. Imports of coal include anthracite and lignite along with some bituminous coal. The European Community does not export large volumes of coal but instead emphasizes consumption of domestically produced coal in order to displace imports, as shown in table 50.

Table 50.--Coal: European Community production, exports, total imports (imports from the United States), 1/ and apparent consumption, 1975, and 1978-82

Year	Production	Exports	Total imports (imports from the United States)	Apparent consumption	Ratio of total imports (imports from the United States) to apparent consumption
	1,000 metric tons				--Percent--
1975	256,923	1,439	41,131	296,615	0.138
			(13,902)		(.046)
1978	238,111	2,943	45,335	280,503	.161
			(7,486)		(.026)
1979	238,748	1,800	59,972	296,920	.201
			(14,841)		(.049)
1980	247,225	858	74,447	320,814	.232
			(28,305)		(.088)
1981	245,640	3,640	71,192	313,192	.227
			(35,752)		(.114)
1982	241,241	2,643	72,149	310,747	.232
			(37,285)		(.119)

1/ EC imports of U.S. products and their ratios to apparent consumption are indicated by parenthesis.

Source: Eurostat, Coal Monthly Bulletins, 1975-1983.

West Germany is the leading producer of coal in the EC. Its energy policy is aimed at reducing the Nation's dependence on imported crude petroleum by assuring a viable domestic coal industry. 1/ The 15-year law, passed in 1981, mandated that German utilities and large consumers of industrial power purchase a specific and increasing amount of domestically produced coal every year until 1995. 2/

U.S. market

Prices of other energy sources greatly influence demand for coal. For example, in 1973 and 1976 when crude petroleum prices rose sharply, electric utility companies demand for coal increased by 11 percent and 10 percent, respectively. As prices for crude petroleum and natural gas increased, coal became more attractive to the consumer for future energy needs.

Apparent U.S. consumption of coal increased from $21.6 billion in 1978 to $35 billion in 1982. This increase in consumption can be attributed to the continued strong growth in the volume of coal required by electric utility companies. Consumption of coal for coke production declined during the period by about 3.5 percent per year as a result of the continued decrease in domestic steel production.

U.S. production

U.S. production of coal increased from $23 billion in 1978 to $42 billion in 1982. Although the value of production increased during the period, the quantity of coal produced in 1978 and 1981 decreased. These decreases were the result of strikes by the United Mine Workers of America (UMWA) in those years. U.S. production of coal reached a record high in 1982, as a result of increased demand.

U.S. imports

U.S. imports of coal (including coke) decreased from $485 million in 1978 to $33 million in 1982. U.S. imports of coke, which accounted for an average of 64 percent of total U.S. coal imports during the period, decreased as a result of a continued decline in steel production. The major sources of U.S. coal imports are the Republic of South Africa and Canada.

U.S. coal imports from the EC decreased from $365 million in 1978 to $383,000 in 1982. U.S. imports of coke accounted for an average of 63 percent of total U.S. coal imports from the EC during the period.

1/ Zachariah Allen, "Projected Consumption 1981-1990: The World Market Outlook--Europe," presented at the conference on International Coal Trade, June 22-23, 1981.

2/ Ibid.

The EC accounted for 75 percent of the total U.S. imports of coal in 1978 and 62 percent in 1979. However, by 1980, the EC's share of the U.S. coal import market had fallen to 5 percent; 3 percent in 1981; and 1 percent in 1982, because of the decrease in domestic consumption of coke by steel producers (table B-1, app. B). Presently, the United States imports less than 1 percent of total EC coal exports.

The ratio of total U.S. coal imports to U.S. coal consumption remained constant at 2 percent or less during the period 1978-82. The ratio of U.S. imports from the EC to consumption ranged from 2 percent to less than 1 percent during the period.

Conditions of competition in the U.S. market

Although the quality of the coal produced in the United States and the EC are essentially the same, the price for the domestically produced coal is less. The average price of U.S.-produced coal was $27.25 per short ton in 1982 compared with about $37.00 per short ton for imported coal from the EC. The price difference is primarily the result of the high costs associated with transporting the coal.

International markets

North America, particularly the United States, leads the rest of the world in total recoverable reserves and production of coal. The United States accounts for 28 percent of the world's recoverable reserves, followed by the Union of Soviet Socialist Republics (U.S.S.R.) and the People's Republic of China (China). The next largest reserves are in the United Kingdom with 7 percent of the world's total reserves. The United States accounts for approximately 21 percent of the world's production of coal, again followed by the U.S.S.R. and China, while the EC accounts for about 11 percent. The following tabulation shows the average share of total world reserves and production, by country, 1980-82:

Country	Total world recoverable reserves	Total world production
	Percent	
United States	28	21
U.S.S.R	24	19
China	14	16
United Kingdom	7	3
Australia	6	4
Federal Republic of Germany	5	6
Poland	4	6
All others	12	25
Total	100	100

The major world markets for coal are Japan and Western Europe. The major sources of coal to these markets are the United States, Australia, and South Africa. World demand for coal is influenced primarily by the price of crude petroleum. When crude petroleum prices are high, consumers tend to switch to alternate energy sources. Demand for coke is influenced by the level of steel production.

The United States is the world's leading exporter of coal. In 1982, U.S. exports of coal were $6.4 billion with 35 percent shipped to Japan and 33 percent shipped to the EC.

Exports of coal from the EC are relatively minor with coke accounting for approximately one-half of total exports. West Germany accounts for 77 percent of the total EC exports of coal. The value of coal exports from West Germany increased from $610 million in 1963 to $2.1 billion in 1981 (table B-21). The major markets for these exports were other EC-member nations, including France, Belgium, Italy, the Netherlands, and the United Kingdom. Approximately 42 percent of the coal exports from West Germany in 1981 were coke. The major markets for West Germany's coal exports are the other EC-member nations, primarily France, Belgium, Italy, and the Netherlands. The U.S. market receives less than 1 percent of these exports.

U.S. exports

U.S. exports of coal increased from $482 million in 1963 to $2.7 billion in 1977 and $6.0 billion in 1981 (table B-20). This dramatic increase is attributable to the international trend toward diversification of energy sources. U.S. exports nearly doubled from 1979 to 1982 because of reduced production, as a result of labor disputes, in Australia, the Republic of South Africa, and Poland, which made the United States the most secure source of coal.

Heavy Electrical Equipment

Description and uses

Heavy electrical equipment is generally recognized by the National Electrical Manufacturers Association (NEMA) and its U.S. members as being composed of four categories of products. These categories are (1) power circuit breakers rated at 242 kilovolts and greater, (2) power transformers rated over 10,000 kilovoltamperes (10MVA), (3) land, steam turbine generator units rated at 10 million watts (10MW) and greater, and (4) land, gas turbine generator units rated at 5MW and greater. Although hydroelectric generating units are also commonly classified as heavy electrical equipment, U.S. and EC production of this equipment is currently minimal.

The first category, power circuit breakers, are devices which protect other electrical equipment from catastrophic failure in the event of an excessive circuit overload. The second category, power transformers, are electrical devices which are used primarily to step-up (increase) or stepdown (reduce) generator output and powerline voltages. Generator output voltages are stepped up for long-distance electrical transmission to reduce power losses which are lower at higher voltages. At the end of the high-voltage transmission, stepdown transformers are used to lower the line voltage.

The remaining categories, turbine generator units, are principally of two types of land-based systems--steam or gas driven. In the steam turbine, oil, coal, or nuclear fuel is used to produce high-pressure steam which runs a generator. Compared with steam turbines, gas turbines are smaller and more self-contained. Gas turbines use a compressor to force air into a combustor where it is mixed with fuel and heated. The expanded gaseous byproducts are then directed through the turbine. Gas turbine generators are relatively simple and compact devices, making them an ideal source of standby or emergency power. Steam turbine generators are, on the other hand, commonly employed in large electric generating power stations.

U.S. industry profile

The U.S. heavy electrical industry consists of about 10 producers, some of which are owned by European companies. The two leading U.S. producers account for a large share of industry shipments. The two firms produce a full line of heavy electrical equipment for U.S. and foreign markets. Other U.S. producers typically specialize in few product areas and, in most cases, do not approach the scale of operations of the industry leaders.

The concentration of the industry is principally related to the nature of production operations. Production of heavy electrical equipment, with the possible exception of lower voltage circuit breakers and transformers, is very capital intensive. Replacement values for certain production process equipment can range from $1 million to $30 million. Production leadtimes range from 6 months to a year for a power circuit breaker, and up to 5 years for a large steam turbine generator unit. As progress payments are rare in this industry, producers, for the most part, must sustain the heavy costs of substantial work-in-process inventories.

Workers employed in this industry are predominantly highly skilled blue-collar machinists and assembly workers, and white-collar engineers and management specialists. (Blue-collar workers are trained through lengthy apprenticeships and on-the-job training programs.) A high degree of craftsmanship is embodied in many of the production and assembly operations. Employment in the industry declined from approximately 40,000 persons in 1977 to 30,000 persons in 1981, or by approximately 25 percent (table B-1). Production and related workers declined from nearly 31,000 workers in 1977 to slightly over 22,000 workers in 1981, or by approximately 30 percent.

Based on 1981 production employment relationships, each $1 million in production of heavy electrical equipment undertaken by U.S. firms translates into an estimated $2.2 million in production in all sectors of the U.S. economy and approximately 30 jobs created, as shown in the following tabulation: 1/

Industry sector	Employment	Output lost
	Number of employees	Million dollars
Heavy electrical equipment	15	1.0
Other manufacturing	8	.9
Other	7	.3
Total	30	2.2

About half of these jobs reside in the heavy electrical equipment sector.

EC industry profile

Over the years, competition in the production of heavy electrical equipment in Europe has been tempered in domestic markets by extensive collaboration agreements covering a wide range of electrical products and involving patent and "experience" exchanges, market allocation, and price fixing among the principal manufacturers. 2/ The principal axes of collaboration in heavy electrical equipment were initially established between U.S. and West German producers but, in turn, technology was licensed to emerging producers in the United Kingdom, France, and Italy.

Since World War II, the heavy electrical equipment industry in the EC has undergone numerous structural changes. These changes were precipitated by the increased size of electrical power generating units, by intensified foreign competition, and by the commercial application of nuclear power.

1/ These estimates are based on the Bureau of Labor Statistics (BLS) input-output model. In the BLS model, certain components of heavy electrical equipment are double counted, therefore the "output lost" data are overstated.

2/ John Surrey and William Walker, "The European Power Plant Industry: Structural Responses to International Market Pressures", Industrial Adjustment and Policy: III, Sussex European Papers No. 12, 1981, p. 6.

These developments combined to increase industry concentration by forcing smaller, less diversified producers into mergers with larger concerns or by driving them out of the industry. Further, in an attempt to sustain the technological capabilities of their indigenous producers, particularly in the face of the increased sophistication of nuclear power installations, numerous European Governments underwrote much of the initial research and development work.

The production of heavy electrical equipment has been viewed by the Governments of numerous EC countries as vital to national security interests. For this reason, West Germany, France, the United Kingdom, and Italy, in particular, have fostered industries capable of suppling virtually all of their intracountry requirements. Owing to the necessity of producers in these countries to establish economies of scale, five large companies currently dominate the production of heavy electrical equipment in the EC. In some cases, these companies have operating subsidiaries in more than one EC country to avoid problems associated with nationalistic procurement practices.

U.S. market

The principal U.S. purchasers of heavy electrical equipment are public and investor-owned electrical utilities and electric cooperatives, which currently number in excess of 200 entities. Approximately 80 of these utilities are responsible for nearly 95 percent of total U.S. purchases. U.S. and foreign producers of heavy electrical equipment market their equipment in essentially the same manner.

Since 1973, many U.S. utilities have experienced increasing pressure on their profitability as the result of almost an eightfold increase in the prices of fossil and nuclear fuel. This rise in cost has only partially been passed on to consumers. As a result of these inflationary pressures and the substantially increased cost of financing the construction of new generating and transmission facilities, utilities have been taking a hard look at long- and short-term equipment purchases. Consequently, many purchases are either being deferred or cancelled, and existing and proposed orders are being reevaluated by utilities.

The provisions of the Buy America Act have benefited U.S. producers of heavy electrical equipment to a limited extent, but only with respect to business solicited by federally operated power authorities. This act authorizes such utilities to purchase U.S.-produced equipment when the bids on such equipment are no more than 6 percent higher than bids by foreign suppliers. An additional 6 percent differential is accorded a U.S. producer which manufacturers the equipment in a designated "labor surplus" area. Such an area would be one in which the unemployment rate is above a specified level.

U.S. shipments

U.S. producers' shipments of heavy electrical equipment declined from $1.3 billion in 1978 to $1.1 billion in 1979, then gradually increased to approximately $1.2 billion in 1982 (table B-1). These shipments were predominantly of steam turbine generator units and power transformers. The decline in shipments in 1979 was largely due to ripple effects within the U.S. utility industry triggered by the rising price of fossil fuels. Shipments of heavy electrical equipment since 1979 have grown at only a 2 to 3 percent annual rate, as a result of decreased U.S. demand for electrical power.

U.S. imports

U.S. imports of circuit breakers rated at 242KV and greater increased from $2.1 million in 1978 to $10.7 million in 1980, but then declined to an estimated $6.2 million in 1982 (table 51).

Table 51.--Circuit breakers rated at 242 KV and greater: U.S. imports for consumption, by principal sources, 1978-81

(In thousands of dollars)

Source	1978	1979	1980	1981	1982 1/
France	1,579	3,541	6,173	4,603	2,500
Switzerland	-	1,181	1,118	1,960	1,800
Japan	514	1,255	2,734	2,862	1,500
All other	39	-	630	243	400
Total	2,132	5,977	10,655	9,668	6,200

1/ Estimated by the staff of the U.S. International Trade Commission.

Source: Compiled from official statistics of the U.S. Department of Commerce and from data submitted in response to questionnaires of the U.S. International Trade Commission in investigation No. 332-144, except as noted.

The decline in circuit breaker imports in 1981 and 1982 was the result of substantial reductions in the value of contracts awarded by U.S. purchasers to foreign producers in 1980 and 1982. The leading foreign source throughout the period was France, although France's share of imports, in terms of value, declined from 74 percent in 1978 to 40 percent in 1982.

Imports of transformers rated over 10,000 kVA increased 91 percent from $16.4 million in 1978 to $31.4 million in 1980, declined to $21.4 million in 1981, then increased to $26.3 million in 1982 (table 52).

Table 52.--Tranformers rated over 10,000 kVA: U.S. imports for consumption, by principal sources, 1978-82

(In thousands of dollars)

Source	1978	1979	1980	1981	1982
Canada	3,871	10,255	10,826	6,764	11,193
West Germany	3,022	4,180	4,674	4,848	8,249
Austria	-	749	2,464	1,317	3,048
The Netherlands	-	-	-	433	1,709
Japan	1,760	-	3,948	3,307	879
Sweden	6,529	3,648	7,350	4,480	151
All other	1,242	1,003	2,090	271	1,031
Total	16,424	19,835	31,352	21,420	26,260

Source: Compiled from official statistics of the U.S. Department of Commerce and from data submitted in response to questionnaires of the U.S. International Trade Commission in investigation No. 332-144.

The overall increase for 1978-82 was 60 percent. The decline in imports during 1981 and 1982 from the peak in 1980, was the result of reduced contracts placed by U.S. purchasers in 1979 and 1980 for foreign equipment. During 1978-82, Canada was the leading foreign source of power transformer imports, principally of equipment from Canadian subsidiaries of U.S. producers. The Canadian share of imports, however, declined from 52 percent in 1979 to 43 percent in 1982, primarily due to increased imports from the EC. European Community transformer imports, principally from West Germany and Austria, accounted for nearly 50 percent of total imports in 1982.

Imports of land, steam, and gas turbine generator units are virtually impossible to ascertain due to the lack of appropriate U.S. import reporting provisions and the pervasive practice whereby most importers separate this equipment into major subassemblies and parts in order to facilitate its shipment. Subassemblies and parts are commonly entered in stages as construction proceeds on a power generating station. Imports of steam and gas turbine generator units 1/ are believed to have been negligible between 1978-82.

Conditions of competition in the U.S. market

The depressed condition of the U.S. heavy electrical equipment market is not expected to improve significantly during the next 5 years. With electric power consumption experiencing a low growth rate and with utility generating reserve margins expected to remain high in the near term, less generation and distribution equipment will thus be required by purchasers.

1/ As reported by respondents to the Commission's questionnaires in connection with its investigation No. 332-144 on the economic impact of foreign export credit subsidies on certain U.S. industries.

The depressed U.S. heavy electrical market and excess production capacity worldwide have led to intense price competition between U.S. and foreign competitors. In some cases, this competition has taken the form of lower nominal bid prices on equipment contracts by foreign suppliers. Quite often, however, foreign producers have secured contracts by submitting fixed price bids (or contract proposals with no labor or material escalators). These escalators have for many years been standard contract features which have allowed producers to protect themselves against the upward rise in labor and material costs. These increases are often substantial when the equipment in question will be in production from 2 to 5 years. U.S. producers have charged that foreign producers, including those in the EC, have been able to submit fixed bid proposals on U.S. equipment contracts as the result of loan, economic risk, and other guarantees provided to them by their own governments.

With respect to the current competitive position of U.S. producers of heavy electrical equipment in the U.S. market compared with that of their counterparts in the EC, U.S. producers currently acknowledge an advantage in labor costs, labor productivity, and in product technology, but no advantage in the costs of securing raw materials. However, U.S. producers claim that many producers in the EC have a decided advantage over U.S. companies in the area of capital formation. They have claimed that such a capital formation advantage results from liberalized accounting rules, hidden untaxed reserves, deferred taxes, and opportunities for the investment of pension funds not available to U.S. firms.

U.S. producers also have claimed that EC-based producers operate in protected home markets which, in many cases, are nationalized utilities which buy only from local producers. Furthermore, foreign governments interested in maintaining employment allegedly give positive support to promoting exports. U.S. producers believe that these practices, along with the forgiveness of the 18 to 22 percent value-added taxes in EC countries and the application of border taxes by these countries, severely disadvantage U.S. firms.

International markets

The principal world markets for heavy electrical equipment are the United States, the U.S.S.R., Japan, the EC, and certain developing nations of the world (principally the organization of petroleum exporting countries and emerging industrialized countries). The three leading industrial countries, in terms of net installed capacity of electric generating plants, (the United States, U.S.S.R., and Japan) accounted for 55 percent of world generating capacity in 1979. EC countries accounted for approximately 15 percent of world capacity in the same year. At present, the U.S.S.R., EC, and Japanese markets are principally served by home country producers. Demand for additional elec- tric power generating capacity, and thus, for heavy electrical equipment in these areas is not increasing as rapidly as it is in the developing countries.

The only developing nations among the leading 25 countries of the world, in terms of net installed generating capacity in 1979, were China, Brazil, India, Mexico, Romania, and Yugoslavia, which together accounted for almost 9 percent of world capacity. Altogether the developing countries account for approximately 13 percent of world capacity. However, when generating capacity in markets in which demand is captive by local producers is deducted from the total, the share of world capacity accounted for by developing countries rises to more than 30 percent. That is, developing countries comprise 30 percent of the current world market for exports of electrical generating equipment readily accessible to worldwide suppliers. Further, electrification systems of developing countries are far less advanced than those of most industrialized countries. Consequently, developing countries are adding generating capacity at a much higher rate than the developed countries. This is particularly true in oil and other resource-rich countries which can generate the large capital outlays necessary to build and maintain power generating stations and electric power grids. Thus, these markets are currently the most promising for world heavy electrical equipment producers.

U.S. exports

U.S. heavy electrical equipment exports increased from $390.2 million in 1978 to $791.6 million in 1980, declined to $554.5 million in 1981, then increased to an estimated $570.0 million in 1982 (table B-1). Mexico and Canada were the leading foreign markets throughout 1978-82, followed by Saudi Arabia. The United Kingdom, West Germany, and France were the most important EC market countries. Exports became increasingly important to U.S. producers during 1978-82, rising as a share of U.S. producers' total shipments (domestic and export), from 24 percent in 1978 to nearly 41 percent in 1980, before declining to approximately 32 percent in 1981 and 1982. This recent decline reflects the stagnant condition of the U.S. market for heavy electrical equipment and increased offshore equipment purchases (particularly by natural-resource-rich developing countries).

EC exports

On the basis of estimates derived from data compiled by the United Nations, exports of heavy electrical equipment from EC member countries increased from approximately $144.2 million in 1963 to an estimated $1.8 billion in 1981 (table B-22). The principal markets for this equipment were EC countries, Saudi Arabia, and Switzerland. However, the top eight leading export markets accounted for only approximately 41 percent of 1981 export shipments. Of the remaining 59 percent, the vast majority was exported to the developing nations. Intra-European Community trade accounted for approximately 35 percent of overall EC country exports. EC exports to the United States in 1981 represented approximately 4 percent of total export trade.

The principal EC exporting countries in 1981, in order of their importance, were West Germany, France, the United Kingdom, and Italy. Estimated export data for France and West Germany, by principal markets, and for specified years from 1963 to 1981 are presented in tables B-23 and B-24.

Conditions of competition in international markets

As a result of the decline in electric power consumption in the industrialized nations of the world since 1973, there is currently significant underutilized worldwide production capacity in heavy electrical equipment. World producers, therefore, have increasingly looked to markets in the developing nations of the world in an attempt to sustain historical production levels. Many of these countries have considerable wealth from the sale of oil and other natural resources, and have embarked on ambitious electrification and industrial development programs. Other countries have less financial liquidity but the same need to rapidly expand their production of power in order to continue their transition to an industrialized state.

U.S. heavy electrical equipment manufacturers have an outstanding worldwide reputation for producing equipment of high quality and efficiency. However, U.S. producers have indicated that these attributes have not been as important in securing equipment contracts in international markets as they have been in domestic markets. The price and financing of heavy electrical equipment purchases are apparently the key factors in securing offshore sales, according to U.S. competitors in these markets. U.S. companies have repeatedly lost contracts to firms in the EC as a result of lower bid submissions or more favorable financing terms. Representatives of U.S. producers have alleged that the lower prices and more favorable financing terms were, in many cases, the result of assistance given by countries in the EC to indigeneous producers.

Machine Tools

Description and uses

Metalworking machine tools are machines used for shaping or surface-working metals. These machine tools are generally classified as one of two types--metal-removing or metal-cutting, and metal-forming. Metal-removing machine tools are those that "shape or surface-work metal by removing metal either in the form of chips, dust, swarf, or similar forms or by spark-erosion, ultrasonic, electrolytic, or other chipless methods." 1/ Examples of such tools include machines for boring, drilling, gear cutting and finishing, grinding (special-purpose, surface, and tool and cutter grinding), polishing, lapping, honing, milling, planing, shaping, slotting, broaching, sawing, filing, turning, threading, and for multiple functions (machining centers). In contrast, metal-forming machine tools are "metal-working machine tools other than metal-removing (metal-cutting) machine tools." 2/ Examples of metal-forming machine tools include machines for punching, pressing, shearing, bending, forging, forming, and other special tasks.

U.S. industry profile

Major U.S. consumers of machine tools are manufacturers of transportation equipment--especially the automobile and aircraft industries. U.S. automobile and aircraft manufacturers, and their suppliers, account for approximately 40 percent of the U.S. market for metalworking machine tools. Other important customers include manufacturers of fabricated metal products, nonelectrical machinery, and electronic or electrical machinery.

Products are sold predominantly through distributors or directly to end users, although a limited number of manufacturers sell their products through agents or by other means. Major purchasers of machine tools tend to buy directly from the producer because of the sophisticated nature of the machine tools and the close working relationship that must be maintained between buyer and seller. Small-job shops and other purchasers of metalworking machine tools generally buy from distributors because they are buying standard, "off-the-shelf," machine tools which do not require the engineering changes that typically necessitate a close association between buyer and manufacturer.

The U.S. metalworking machine tool industry has declined both in number of firms and in employment since 1977. In 1982, there were approximately 1,140 establishments producing metalworking machine tools in the United States, representing a 15-percent drop from the 1,343 establishments reported in 1977. In addition to the primary producers, there are a small number of establishments in other industries that manufacture machine tools as secondary products. During 1977-82, there were 64 mergers in the metalworking machine

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1/ As defined in the Tariff Schedules of the United States Annotated, 1984
2/ Ibid.

tool industry. The number of mergers increased through 1980, but declined in both 1981 and 1982. The following tabulation shows merger data obtained from the Federal Trade Commission and various editions of the Yearbook on Corporate Mergers, Joint Ventures, and Corporate Policy:

Year	Number of mergers
1977	8
1978	7
1979	10
1980	18
1981	10
1982	11
1983 (January-May)	4

Of the 68 mergers, 7 involved foreign firms taking over U.S.-owned firms; whereas 5 mergers involved a U.S.-owned firm acquiring a foreign firm. There is a consensus among manufacturers and purchasers of metalworking machine tools and industry analysts that mergers, acquisitions, and closings will accelerate in the 1980's. 1/

The average U.S. metalworking machine tool establishment employs 77 people, of which 48 are production workers. The majority of U.S. establishments employ fewer than 20 people, and less than 1 percent of the establishments employ 1,000 or more people. As technological advances are applied to the manufacturing process, fewer skilled machinists will be required to run production equipment. For example, advances in numerical control have made it possible for one skilled machinist to run two or more machine tools where before one machinist was required for each machine tool. The application of new technology in the manufacturing process will probably continue to affect employment levels in the industry.

To the extent that any loss of domestic and/or international market share results from targeting practices, the corresponding absence of each $1 million in production not undertaken by U.S. machine tool manufacturers would translate into an estimated 28 workers displaced in all sectors of the U.S. economy (based on 1982 production/employment relationships), as seen in the following tabulation:

Industry sector	Displaced employment
	Number
Machine tools	16
Other manufacturing	6
All other	6
Total	28

Source: Estimated by the staff of the U.S. International Trade Commission, using the BLS input-output model.

1/ According to Commission staff interviews with manufacturers and purchasers in Ohio, Illinois, and Michigan, and "Foreign Competition Stirs U.S. Toolmakers," Business Week, Sept. 1, 1980, pp. 68-70.

EC industry profile

Major European producers of machine tools are located in France, Italy, the United Kingdom, and West Germany. In 1982, West Germany was the principal European source of machine tools and the world's third largest machine tool producing nation. Italy, the United Kingdom, and France were the second, third, and fourth principal European sources, respectively, in 1982.

Automobile and aircraft manufacturers are significant purchasers of machine tools and account for approximately one-half the value of machine tool consumption in France, Italy, the United Kingdom, and West Germany. Other typical purchasers include manufacturers of fabricated metal products, and electrical and nonelectrical machinery.

In Western Europe, machine tools are sold either directly to end users (this method accounts for about 60 percent of sales) or through distributors (this method accounts for about 40 percent of sales). The "direct to end user" method is predominate due to the geographical proximity of buyers. For example, in West Germany, a producer would most likely sell his product directly to a West German buyer, although he would be inclined to sell his product through distributors in other European countries.

Both the number of firms and employees decreased during 1977-82 in the combined machine tool industries of France, Italy, the United Kingdom, and West Germany. In 1982, there were 1,253 firms, down from 1,278 in 1977. This decrease in the number of firms reflects plant closings, as well as a few mergers and acquisitions. Employment also decreased 11 percent, declining from 209,000 persons in 1977 to 185,000 in 1982. Skilled workers make up a high percentage of the European production workforce due to the highly technical nature of the manufacturing process.

U.S. market

The United States is the largest single market for metalworking machine tools in the world. U.S. consumption increased from $1.0 billion in 1958 to $4.8 billion in 1978 and to $6.0 billion in 1982 (table B-1, app. B). Major factors influencing the dramatic increase in metalworking machine tool consumption in the United States were the retooling of the U.S. automobile industry and the aircraft industry in the 1970's and demand for machine tools by producers of oil and gas equipment. The automobile and aerospace industries were developing new, fuel-efficient motor vehicles and aircraft, while the oilfield machinery industry was trying to satisfy increased worldwide demand for threaded oil well casings and related products.

U.S. shipments

U.S. shipments of metalworking machine tools (including parts) increased from $1.0 billion in 1958 to $2.8 billion in 1967, before decreasing to $1.9 billion in 1972 (table B-1). Shipments increased until 1981, then decreased to $5.5 billion in 1982.

As shown in figure 1, U.S. shipments of metalworking machine tools (reported in millions of 1982 dollars) peaked in 1967, 1975, and 1980 at $5.6 billion, $4.1 billion, and $5.4 billion, respectively. Low points in shipments occurred in 1971 and 1976. In 1982, U.S. shipments were valued at $3.7 billion. Industry sources predict 1983 shipments will be approximately 30 percent less than 1982 shipments. 1/

U.S. imports

U.S. imports of metalworking machine tools (including parts) from the European Community increased significantly after 1958, rising from only $20 million to approximately $115.9 million in 1967. 2/ The value of imports from the European Community declined after 1967 but later surpassed the 1967 level in 1974, when the import value reached $146.9 million. Subsequently imports continued to increase, reaching $168.9 million in 1977 and $445 million in 1980, but decreased to $421.2 million in 1981, and further declined to $382.1 million in 1982. Machine tool imports from the EC, as a percent of total U. S. machine tool imports, decreased from 71 percent in 1958 to 57 percent in 1967, 29 percent in 1980, and to 24 percent in 1981. In 1982, imports of European-built machine tools increased slightly, as a percent of total U.S. machine tool imports, to 26 percent.

U.S. imports of metalworking machine tools, as a percent of consumption, increased from 3.1 percent in 1958 to 24.8 percent in 1982. At the same time, U.S. imports from the European Community, as a percent of consumption, increased from 2 percent in 1958 to 6 percent in 1982.

Conditions of competition in the U.S. market

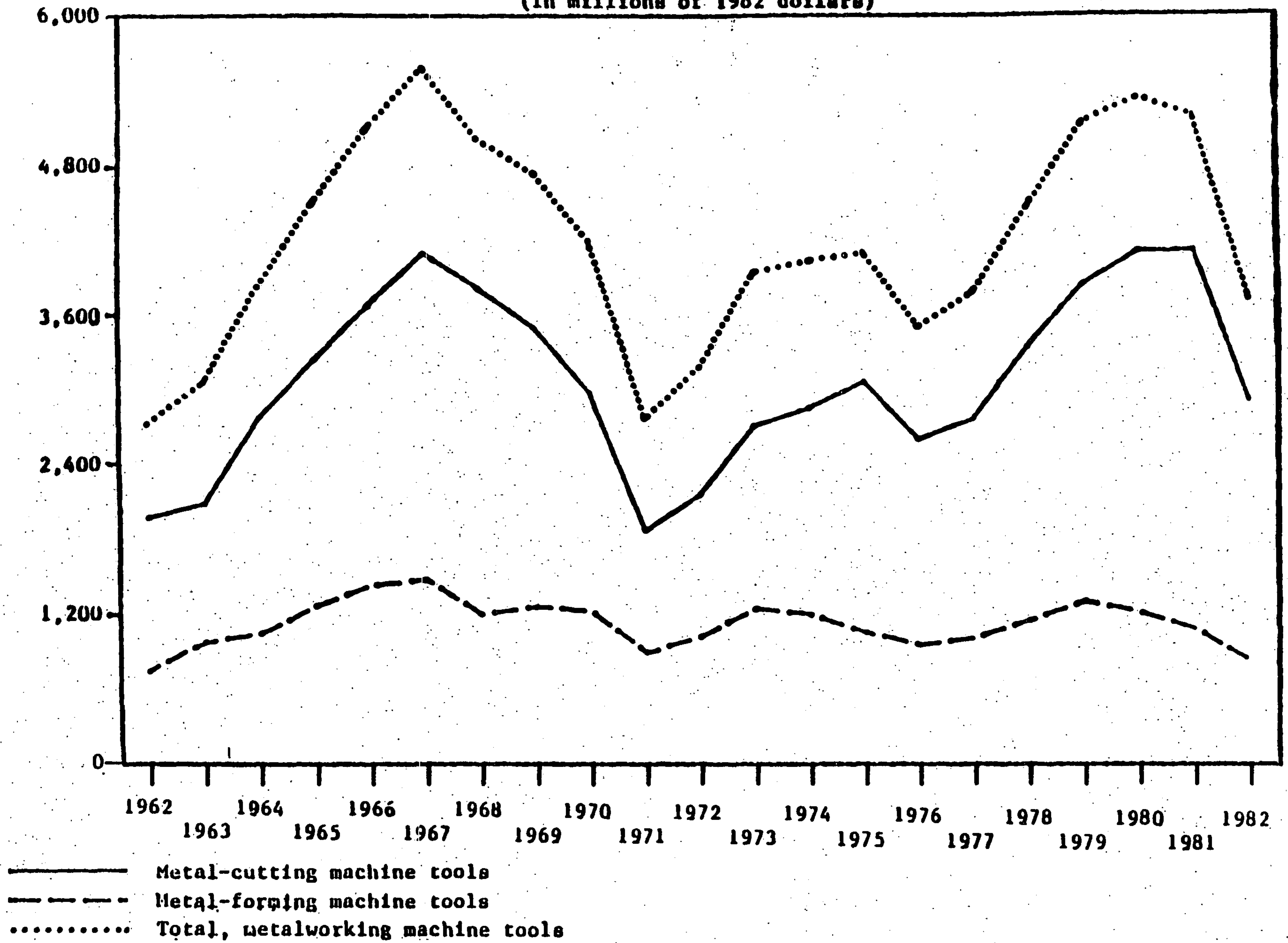
Four factors are important to a company's ability to compete effectively in the machine tool industry--(1) labor cost (wages); (2) availability of capital; (3) technological knowhow and design ability; and (4) in the case of certain types of machines, low sales price. Wages paid to production workers in West Germany are estimated to be higher than those paid to their counterparts in the United States. 3/ Yet wages paid to production workers in France, Italy, and the United Kingdom, on average, are two thirds the amount paid to their U.S. counterparts. 4/ These wage differences may be a significant factor when considering manufacturing costs in West Germany and the United States vis-a-vis Italy, the United Kingdom, and France.

Because of the cyclical nature of the market, sources of financing are critical for survival. It has been difficult for the U.S. machine tool industry to generate capital. Since the profit of machine tool companies is generally only on par with that of other manufacturing industries during upswings and is much lower during downturns, and since the majority of U.S.

1/ U.S. Department of Commerce, U.S. Industrial Outlook, 1983.
2/ Data from National Machine Tool Builders' Association (NMTBA).
3/ U.S. Department of Labor, Bureau of Labor Statistics.
4/ Asian Wall Street Journal Weekly, Jan. 10, 1983, p. 11.

Figure 1.--Metalworking machine tools: U.S. shipments, 1962-82.

(In millions of 1982 dollars)



Source: Current Industrial Reports, Metalworking Machinery, U.S. Department of Commerce.

companies are small and privately held, few domestic financial institutions will lend, given the risks involved. (The ratio of debt to equity in the U.S. industry is typically below 50 percent). Therefore, profit earned in good years is generally held as a buffer for the downside of the cycle. The ratio of debt to equity in West Germany, Italy, the United Kingdom, and France, in 1981, was reported to be 47 percent, 34 percent, 200 percent, and 85 percent, respectively. 1/ Machine tool manufacturers with better access to funds can maintain a highly skilled workforce and invest in plant and equipment, even in times of weak demand.

The emerging technologies of computer-aided design and computer-aided manufacture (CAD/CAM) are beginning to play an important role in the competitiveness of machine tool companies. Machine tool builders which now utilize CAD/CAM techniques in their own manufacturing operations are believed to be in a more favorable competitive position than those that do not. However, the diffusion of new technology in the U.S. machine tool industry has generally been slow. 2/ One reason for this may be the difficulty in obtaining capital for U.S. machine tool builders, compared with some foreign machine tool builders.

One barometer of the diffusion of manufacturing technology in the U.S. machine tool industry is the number of numerically controlled (NC) machine tools in use in machine tool plants. A study by the U.S. Army in 1978 revealed that a sample of 25 percent of all U.S. manufacturing companies with 20 or more production workers, only 4 percent of the machine tools in use were NC.

According to industry sources, the West German and U.S. machine tool producers are about equal considering their technology of flexible manufacturing systems (FMS). (West Germany may be ahead of the United States in terms of automatic tool control and actual cutting time of the tool in the FMS field.) 3/ France, Italy, and the United Kingdom are not currently competitive in the FMS area, although the United Kingdom has a number of programs under way to promote this technology.

Product technology of U.S. machine tool producers is generally held to be competitive internationally. 4/ The United States is superior in technology and production of large sophisticated NC machine tools for use in the production of aircraft, military equipment, and other specialized products. For the most part, foreign producers do not compete in these product lines. 5/

1/ Post-hearing submission of the European Committee for Cooperation of the Machine Tool Industries (CECIMO), in connection with the Commission investigation No.332-149 on competitive assessment of the U.S. metalworking machine tool industry.

2/ The Competitive Status of the U.S. Machine Tool Industry, National Academy Press, Washington, D.C., 1983, p. 25.

3/ Iron Age, Nov. 24, 1980, pp. 119 and 120.

4/ Ibid, p. 67.

5/ Industry Week, Aug. 9, 1982, p. 47 and American Machinist, September 1979, p. 117.

In a 1982 survey, U.S. purchasers of both U.S.-made and foreign-made machine tools were asked to rate producers regarding the engineering of their products. 1/ Purchasers rated U.S. producers only slightly higher than West German producers, and much higher than producers from Italy, the United Kingdom, and France. 2/ Thus, it appeared that U.S. producers have a slight overall edge in product technology over their foreign competitors, at least in the U.S. market. When the machine tool categories were broken down into types of machine tools used, U.S. products were rated first, Japanese second, and West German third in the metal-cutting category; Japanese products were rated first, United States second, and West Germany and the United Kingdom tied for third in the metal-forming category.

Generally, standard-type machine tools produced in France, Italy, the United Kingdom, West Germany, and the United States are comparably priced. However, prices for specialized machine tools of the same type vary considerably, due to the quality image of products made in certain countries. For example, U.S.-made specialized machine tools for the automotive and aircraft industries are noted for their quality and durability and are used almost exclusively in the United States, although another country's product, designed for the same function, may be lower priced.

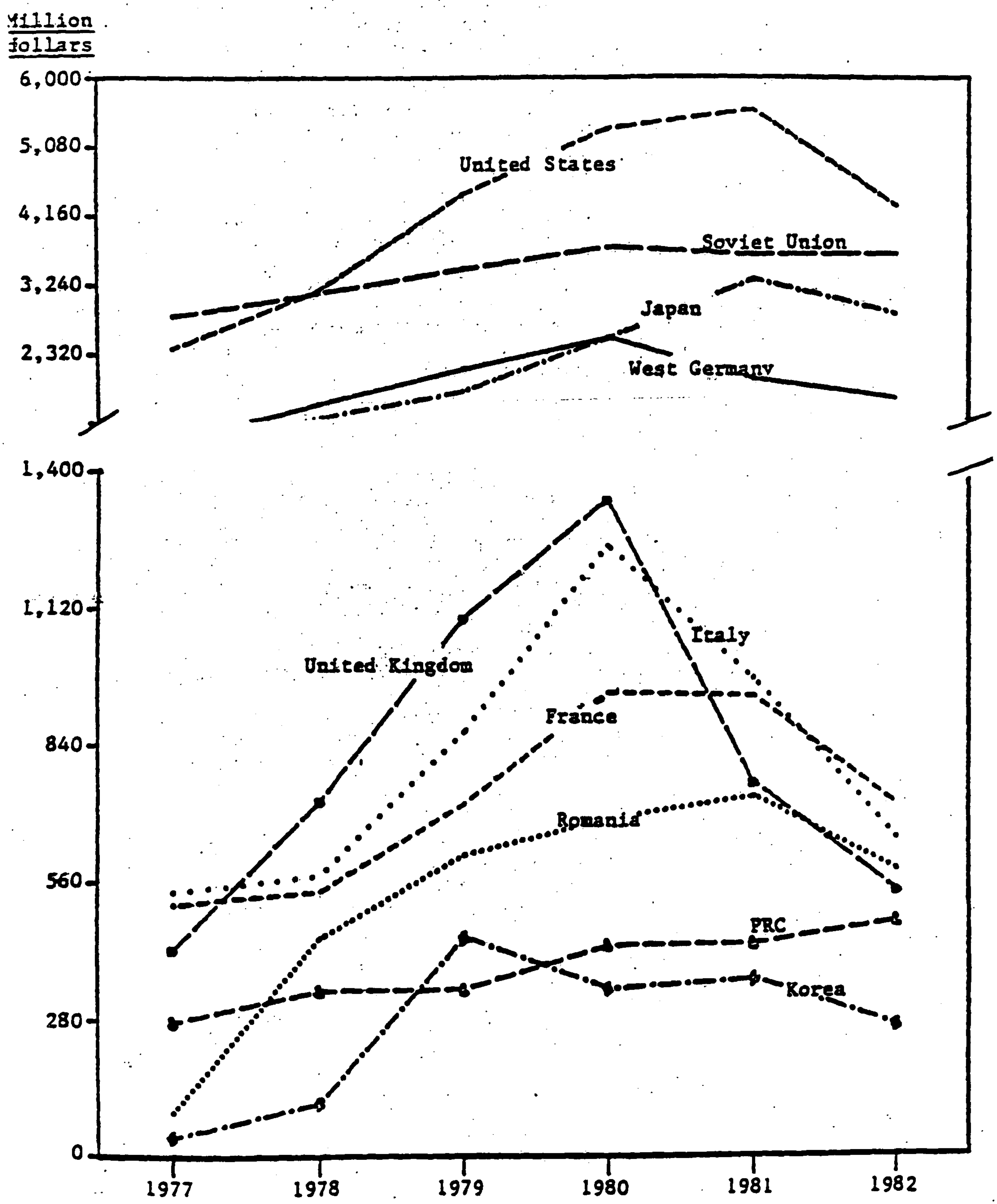
International markets

Apparent world consumption of metalworking machine tools by the 10 largest consuming countries increased dramatically to $19.1 billion in 1981, or by 193 percent, from the $9.9 billion consumed in 1977 (fig. 2). Consumption by these 10 countries dropped to $16.3 billion in 1982. During 1978-82, the United States was the largest consuming nation of machine tools. West Germany's consumption increased 55 percent during 1978-80, but then decreased 33 percent during 1981 and 1982. Italy, the United Kingdom, and France followed a similar pattern. In Italy, the country with the most dramatic increase, consumption rose 91 percent during 1978-80. In the United Kingdom, the country with the largest decrease, consumption dropped 53 percent during 1981-82. In 1982, the four largest machine-tool-consuming countries were the United States, the Soviet Union, Japan, and West Germany, in order of magnitude, which accounted for 50 percent of total consumption of the 10 major consuming countries. France, Italy, the United Kingdom, and West Germany accounted for 24 percent of total consumption of the 10 majors; the United States accounted for 26 percent.

The demand for machine tools increased during 1977-81 primarily because of the retooling that was occurring in the automotive, aircraft, defense, and oil and gas equipment industries. In 1982, with a world oil glut, and with the major purchasing industries essentially retooled, the world experienced a decline in consumption.

1/ Hitchcock Marketing and Research Services, "Three Views of Machine Tool Marketing," December 1982.
2/ Ibid.

Figure 2 .--Metalworking machine tools: Major coutries' consumption, by values, 1977-82.



Source: American Machinist.

U.S. exports

The major markets for U.S. exports of metalworking machine tools and parts have shifted during 1963-81. In 1963, Japan was the major U.S. export market, accounting for $25.4 million, or 13 percent, of total U.S. exports (table B-25). In 1967, 1972, and 1977 Canada was the leading export market. In 1981, Mexico was the principal U.S. export market, accounting for $261.3 million, or 25 percent of U.S. exports. Other important markets for U.S.-made machine tools and parts during 1963-81 were the United Kingdom, West Germany, France, Brazil, and Australia.

EC member exports

Exports of metalworking machine tools to world markets (including other EC member countries), in terms of value, increased 574 percent during 1963-81, rising from $653 million to $4.4 billion. The EC exported approximately 61 percent of its production in 1977 and 1981, compared with about 65 percent in 1982.

Major markets for EC exports are the United States, France, Austria, West Germany, and the United Kingdom. Although the United States was the major market for EC exports in 1981, it was the second largest market in 1977, the fifth largest in 1972, and the seventh largest in 1963 (table B-26).

Exports of West Germany, Italy, the United Kingdom, and France totaled around $4.2 billion in 1981, or 95 percent of total EC exports. West Germany accounted for 57 percent, or $2.4 billion, of these four countries' total exports (table B-27); Italy for 19 percent, or $791 million (table B-28); the United Kingdom for 14 percent, or $567 million (table B-29); and France for 10 percent, or $392 million (table B-30).

The EC share of total world exports was approximately 54 percent in 1981, compared with 58 percent in 1977. 1/ The share of total world exports accounted for by France, Italy, the United Kingdom, and West Germany decreased from 43 percent in 1977 to 40 percent in 1981. In 1982, the last full year of data, the EC share of total world exports was 55 percent; the share accounted for by France, Italy, the United Kingdom, and West Germany was 41 percent.

Conditions of competition in international markets

Machine tool builders in the European Community have traditionally produced sophisticated machines with a worldwide reputation for quality. In general, U.S. metalworking machine tools are equally competitive with most types of machine tools manufactured in the European Community. However, there are certain machine tools manufactured in the European Community that are superior to comparable U.S.-made products, and there are certain U.S.-produced machine tools that are superior to comparable products manufactured in the European Community.

1/ Data from American Machinist.

A number of U.S. producers have European subsidiaries, licensing agreements, and/or joint ventures with European manufacturers, which enable them to keep costs down and be price competitive with European manufacturers. Likewise, many European producers have U.S. subsidiaries, licensing agreements, and joint ventures with U.S. manufacturers. Both U.S. and European builders serve international markets through subsidiaries and distributor networks.

Semiconductors

Description and uses

Semiconductors are solid-state, crystal devices whose electrical properties are characteristic of materials which are neither conductors nor insulators. The electrical properties in these semiconductor materials (principally silicon) are created through the introduction of small amounts of impurities or dopants. The principal types of semiconductors are transistors and diodes (discrete semiconductors) and integrated circuits.

Semiconductor production involves a complex fabrication process requiring a large investment in plants and equipment. The major steps in production are wafer fabrication (including the fabrication of the raw wafer), assembly and testing. Wafers are fabricated from high-purity silicon slices whose surfaces are etched, implanted, and metallized. The etched patterns (each a semiconductor chip) are produced by using photographic masks whose precise alignment are necessary to deliver close tolerances. These operations are performed in dust-free, clean rooms to avoid device failure through surface contamination. After fabrication of the wafers (which can contain hundreds of unscored integrated circuit or transistor chips) is completed, an initial probe test is performed and defective chips are separated out. The wafers are sectioned and usually exported to developing countries for package assembly, wire bonding, and encapsulation. Although these assembly operations are performed by low-cost labor, a high degree of dexterity is required to produce consistently error-free devices.

The finished semiconductors are returned to the United States for final testing and marketing. Because of this rationalization, developing countries account for a large share of both U.S. imports and exports. However, two of the largest U.S. firms which produce semiconductors for internal consumption have not rationalized production abroad, but instead have automated their final assembly and encapsulation operations in the United States.

U.S. industry profile

The semiconductor industry is an outgrowth of the point-contact transistor developed by Bell Laboratories in 1948. This discovery was followed by the development of the integrated circuit during the early 1960's. Initial uses of semiconductors were limited to operational amplifiers, logic circuits, and shift resistors which were incorporated into computers and other electronic products displacing vacuum tubes. At present, semicondutors are complex devices containing thousands of components and performing hundreds of electrical functions.

Semiconductors are produced by 112 firms operating about 545 establishments in the United States, with four of these firms accounting for about 60 percent of U.S. shipments. This concentration in the industry remained relatively unchanged during 1978-82, although captive firms became more important as independent semiconductor firms were merged with large end-product producers. Major semiconductors establishments are located in Texas, New York, and California.

Persons employed in the semiconductor industry represent some of the highest skilled engineers, scientists, and technical personnel found in the U.S. electronic industry. Manufacturing operations including the design and fabrication of masks and the production of wafers and semiconductor products require not only unusual engineering skills, but also a thorough knowledge of complex machines and processes. A high degree of skill is also required for the design of software packages which serve as instructions for product use. Employment in the semiconductor industry increased from an estimated 135,000 persons in 1978 to 197,000 persons in 1982 (table B-1, app. B).

To the extent that any loss of domestic and/or international market share results from targeting practices, the corresponding absence of each $1 million in production not undertaken by U.S. electronic component manufacturers would translate into an estimated 38 workers displaced in all sectors of the U.S. economy (based on 1982 production/employment relationships), according to the staff of the U.S. International Trade Commission, using the BLS input-output model, as seen in the following tabulation:

Industry sector	Displacement of employmemt
	(Number)
Electronic components	20
Other manufacturing	8
All other	10
Total	38

EC industry profile

The semiconductor industry in Western Europe is largely limited to four EC producers (one each in West Germany, the Netherlands, France, and Italy), and a large West German chemical firm which produces wafers of high-purity silicon. These semiconductor producers are dependent on U.S. technology and have generally lagged from 1 to 3 years behind U.S. producers in new product development. In order to gain access to the U.S. market, the West German semiconductor producer purchased a 25-percent interest in one of the leading U.S. semiconductor firms, and the Dutch producer operates a wholly owned U.S. subsidiary. The Italian and French producers have not attempted to enter the U.S. market through equity purchases. The West German chemical firm is a world leader in the production of silicon wafers and through its technology, the firm remains a competitive source worldwide for these semiconductor materials.

U.S. market

The U.S. market for semiconductors includes virtually all domestic producers of electronic end products. Producers of digital computers are the largest market, accounting for about 35 percent of domestic semiconductor shipments. Computer producers have accounted for this share of domestic shipments over a period of years even as the market showed a multibillion-dollar expansion. A large share of the computer market is served by vertically integrated computer producers. Following computer producers, producer of consumer and military electronics are the next largest markets, accounting for about 20 percent of domestic shipments. The remainder of the domestic market is accounted for by various end-product producers, including producers of communications equipment, process control equipment, and automobiles.

U.S. shipments

U.S. producers' shipments of semiconductors increased from $5.4 billion in 1978 to an estimated $10.4 billion in 1982 (table B-1). During the period, apparent U.S. consumption increased even faster, rising from $5.2 billion to $10.8 billion. Much of the growth in shipments of semiconductors was related to a strong growth in demand for integrated circuits. In 1982, integrated circuits accounted for about 80 percent of the value of total domestic shipments.

More than half of U.S. shipments of semiconductors are transfers (captive shipments) to end-product divisions within the same firm. As a result, marketing and distribution are usually determined by decisions which are related to the production of the end product. Typical distribution problems concerning final price, delivery, and quality are minimized, and the division producing the end product is assured of a controlled source of supply. Captive producers often purchase semiconductors in the open market, however, during the periods of strong internal demand. Shipments to the open market (merchant market), on the other hand, are largely determined by negotiated contracts with large, original-equipment manufacturers, or by purchases made by independent distributors.

U.S. imports

Imports of semiconductors are a growing and important item of trade. During 1978-82, imports increased from $1.7 billion to $4.2 billion, representing an average annual increase of 28 percent (table B-1). The largest increase occurred in 1980 when imports rose by $898 million. Malaysia was the largest supplier during the 5-year period, accounting for 21 to 26 percent of imports. Singapore, Japan, and the Philippines were also large suppliers, and when combined with Malaysia, accounted for 68 percent of U.S. imports in 1982. About 78 percent of U.S. imports were accounted for by U.S. semiconductor producers which operate assembly plants in developing countries, principally in the Far East. As a share of apparent U.S. consumption, imports increased from 26.9 percent in 1978 to an estimated 39.1 percent in 1982.

Imports of semiconductors from the EC increased from $90 million in 1978 to $227 million in 1980, and then declined to $198 million in 1982. As a share of total imports, imports from the EC fluctuated between 4.7 and 7.0 percent during 1978-82; as a share of apparent U.S. consumption, imports from the EC fluctuated between 1.7 and 2.6 percent. During the period, West Germany, the United Kingdom, and France accounted for a large share of imports from the EC as shown in table 53.

Table 53.--Semiconductors: U.S. imports from the EC, by member countries, 1978-82

Country	1978	1979	1980	1981	1982
	1,000 dollars				
West Germany	31,647	69,747	95,881	60,992	44,973
United Kingdom	11,788	21,156	30,267	41,095	53,558
France	14,080	40,244	52,209	47,380	42,409
Netherlands	1,081	2,127	4,092	9,884	2,717
Ireland	19,884	24,627	25,022	21,869	18,747
Belguim	5,174	1,861	1,407	1,831	1,821
Italy	6,285	12,271	18,521	25,263	32,831
Denmark	406	228	129	372	803
Greece	92	19	0	0	0
Total	90,437	172,281	227,528	208,686	197,859

Source: Compiled from official statistics of the U.S. Department of Commerce.

Conditions of competition in the U.S. market

European semiconductor producers have not been a factor in the U.S. market except in providing high-purity silicon wafers. European producers have been less innovative than U.S. and Japanese producers and have been unable to gain significant world market share. With a lack of market share, European suppliers have not been cost-effective producers and have accounted for only 10 percent of world production.

International markets

Principal markets for semiconductors are located in the United States, Japan, and Western Europe where a large share of end products incorporating semiconductors are produced. Developing countries such as Malaysia, Taiwan, and Singapore are also emerging and growing markets due to their increasing consumer product industries. In relative market consumption by region in 1979, North America accounted for about 42 percent of the value of world semiconductor consumption followed by Japan and Europe with 26 and 24 percent, respectively. The rest of the world accounted for the remaining 8 percent.

The U.S.-based industry is characterized by strong technological leadership in all semiconductor markets, and along with its foreign subsidiaries, accounted for more than 60 percent of the value of world semiconductor shipments in 1981. The Japanese-based industry is also characterized by a strong technological base, but one which is more narrowly focused in the production of semiconductors for computer applications and consumer electronics. The Japanese-based industry accounted for 25 to 30 percent of the value of world semiconductor shipments in 1981.

The European industry also has a strong technological base, although the European market is considered to be 15 distinct geographical markets. This fragmentation of the European market has repeatedly proved a greater problem for individual European producers than for U.S. multinational producers that have served these markets longer. U.S. producers account for a major share of the European markets either through local production or through U.S. exports.

U.S. exports

During 1978-82, U.S. exports of semiconductors and parts increased by 95 percent, rising from $2.0 billion to $3.8 billion (table B-1). Malaysia, Singapore, and the Phillipines accounted for the largest share of exports. These countries reflect the growing level of U.S. exports of chips and wafers (73 percent of the value of U.S. exports in 1981) transferred to plants in these countries for wire bonding, encapsulation, and testing. West Germany is considered the largest export market when exports under items 806.30 an 807.00 are not considered. West Germany is also an entry point into the European Community from which semiconductors can be transshipped to other Community members.

Exports of semiconductors from the United States do not reflect the substantive share of world markets served by U.S-based semiconductor producers. U.S. producers have made extensive investments in plants and equipment in Western Europe for semiconductor production. Markets in Western Europe and Japan are more easily served by U.S. producers with the establishment of local production plants. Semiconductors produced and sold in Western Europe and Japan reduce the level of U.S. exports to those areas.

EC exports

According to official statistics of the United Nations, exports of semiconductors from the EC increased from an estimated $2.5 billion in 1978 to $3.1 billion in 1981 and then declined to an estimated $3.0 billion in 1982, as shown in the following tabulation:

Year	Value (million dollars)
1978	1/ 2,520
1979	2,700
1980	2,950
1981	3,148
1982	2,990

1/ Estimated by the staff of the U.S. International Trade Commission.

Principal markets for semiconductors produced in the EC are the member countries (tables B-33, B-34, and B-35). Intracountry trade accounts for a large share of exports since semiconductors produced outside of the EC customs union are dutiable at 17 percent ad valorem when entered into the Community. Exports from the EC in 1981 to the United States and Japan accounted for 8.7 and 2.0 percent, respectively, of total exports. The principal exporting member countries of the EC from 1972 to 1981 were West Germany, France, and Italy. In 1981, these countries accounted for 64 percent of total EC exports.

Conditions of competition in international markets

The principal strengths of U.S. semiconductor firms in international markets are related to an extensive semiconductor product line and a large investment in plants and equipment in Western Europe. During 1978-82, U.S. firms were dominant in international markets for advanced devices such as microprocessors and microcomputers. U.S. firms were dominant in the European market during the period largely as a result of producing semiconductors locally both to avoid the EC's high duty rate and to serve end-product firms which give more favorable considerations to local producers. Since about 1978, in order to become more competitive, Japanese firms also began extensive investment in semiconductor plants in Europe, particularly in Ireland.

Steel Mill Products

Description and uses

Steel is a generic term used to describe a variety of iron-carbon alloys. Although steel may contain other elements intended to enhance one or more properties (such as hardness, strength, or corrosion resistance) and may contain certain elements retained from raw materials, iron must predominate by weight. The different grades of steel are generally classified in four categories: carbon, stainless, tool, and other alloy.

After production, steel is generally solidified into semifinished shapes prior to rolling, drawing, or welding into such products as sheets and strip (used widely by the automotive industry), plates (used in construction, machinery, and industrial equipment), wire and wire products, rails and accessories, and pipe and tubing. Steel products are used in virtually all sectors of an industrial economy; their use far exceeds that of any other metal.

U.S. industry profile

In the U.S. market, sales of steel mill products are made either directly to end users or to service centers/distributors, which subsequently sell to end users. In 1982, about 20 percent of domestically produced steel was shipped to service centers and distributors; 80 percent was shipped directly to end users.

Steel importers have traditionally sold their steel to independent U.S. steel service centers/distributors. In recent years, however, many foreign steel producers (particularly those in the EC) established wholly owned or affiliated service centers/distributors networks. In contrast, only three U.S. steel companies currently operate subsidiary service centers.

The seven largest steel producers in the United States accounted for about 70 percent of total raw steel production in 1982. These firms not only operate blast furnaces, steelmaking furnaces, and rolling and finishing facilities, but own and operate mines which provide iron ore, coal, and limestone for the production of iron. In addition to the 7 largest firms, there are over 80 other U.S. steel producers, many of which are relatively small, nonintegrated companies which produce steel in electric furnaces, using recycled iron and steel scrap as their primary raw material.

According to a study conducted by the Office of Technology Assessment, 1/ slightly more than one-half of all technical personnel in the industry are employed in production and quality control, with somewhat less than one-fifth in engineering and R. & D. Vertically integrated firms typically employ large numbers of technical people in production positions, whereas alloy/specialty

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1/ Office of Technology Assessment, Technology and Steel Industry Competitiveness, Washington, D.C. 1980, p. 363.

firms typically employ a high proportion of technical people in quality control and marketing areas. These differences in the use of technical personnel are, to some extent, a reflection of the relative importance of these areas to the two industry segments. The nonintegrated segment employs the fewest technical people, due in part to the greater simplicity of both that segment's processes and its products.

Employment level during the 1950's and 1960's were higher, on the average, than during the 1970's. Between 1952 and 1960, the peak employment year was 1953, with 650,000 employees. According to data from the Bureau of Labor Statistics, 1/ output per man-hour rose slightly during this time period. During the 1960's, productivity grew more rapidly and by the late 1960's, a 36-percent increase in output per man-hour had been achieved compared with that of the 1952 level. Peak employment for the decade, 548,000 workers, was attained in 1965. Growth in productivity continued throughout the 1970's, with employment declining from a high of 531,000 workers in 1970.

Sharp declines in the number of employees have occurred since 1979, during which, an average of 453,000 persons were employed in the industry, versus a 1982 average of 289,000. This reduction reflects a number of factors, including reduced production, and further increases in productivity which have resulted from structural and technological changes in the industry. An example of the degree to which productivity has increased is illustrated in a comparison of steel production in 1971 and 1981. In 1981, the industry produced 120.8 million tons of steel with 391,000 employees, which compares with a total of 487,000 employees in 1971, when a comparable tonnage was produced.

To the extent that any loss of domestic and/or international market share results from targeting practices, the corresponding absence of each $1 million in production not undertaken by U.S. iron and steel manufacturers would translate into an estimated 21 workers displaced in all sectors of the U.S. economy (based on 1982 production/employment relationships), according to the staff of the U.S. International Trade Commission, using the BLS input-output model, as seen in the following tabulation:

Industry sector	Displaced employment
	Number
Iron and steel	8
Other manufacturing	4
All other	9
Total	21

1/ U.S. Department of Labor statistics, as reported by American Iron & Steel Institute.

Selected member state industry profiles

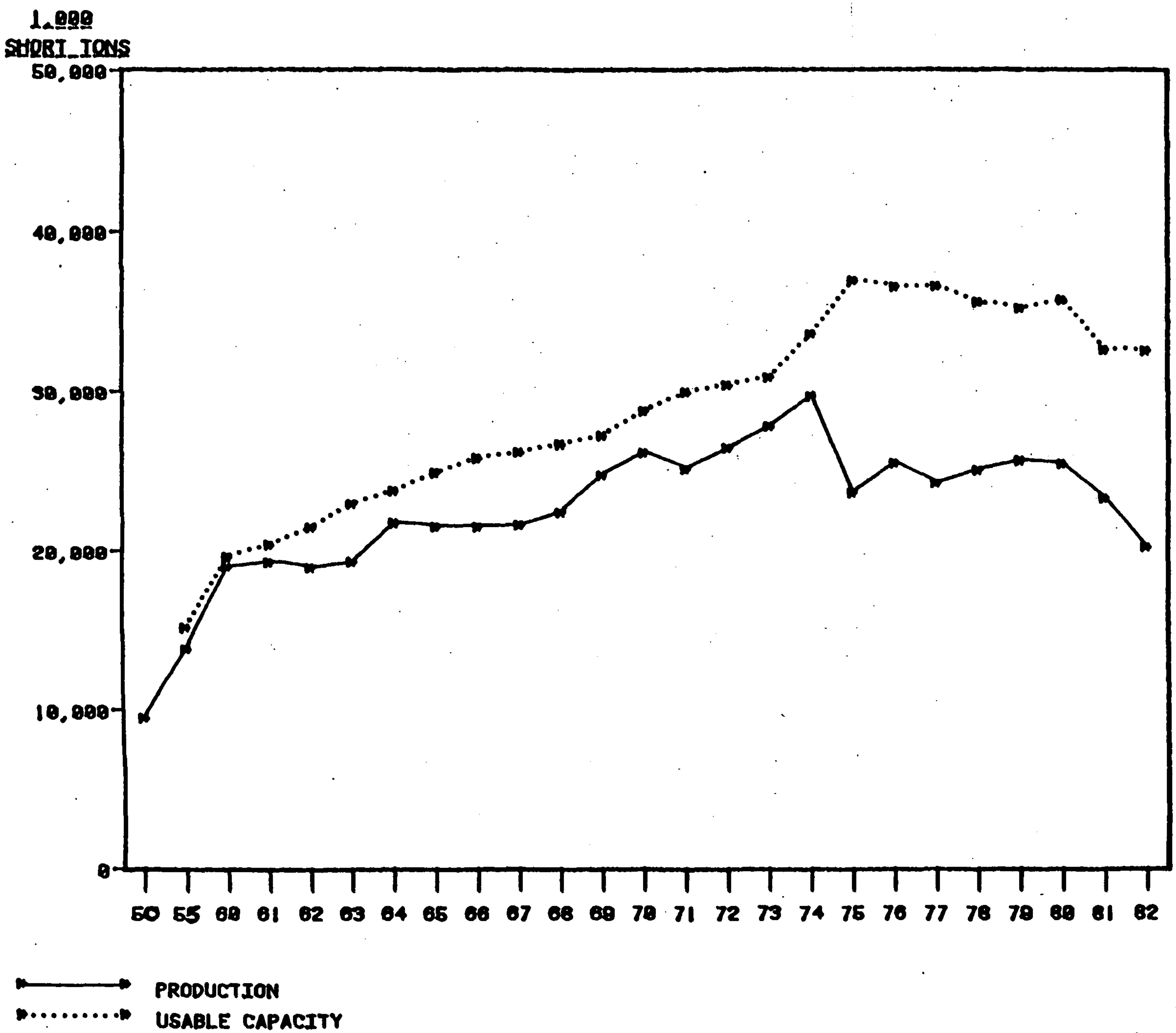
France.--At the end of World War II, the French steel industry was composed of a number of small- and medium-sized firms which, with the exception of several coastal plants, had emerged relatively undamaged from the war. A considerable proportion of French steel capacity, however, was in need of modernization, as investment during the depression years preceding the war had been minimal. In addition to communitywide programs, the French Government was actively involved in industry reconstruction. Under the Monnet plan, many of the French firms were encouraged to merge. Between 1948 and 1956, six major industrial groupings involving about 75 percent of French steel capacity were regrouped. At the same time, one of the primary Government objectives for the industry was to increase capacity and production. During the 1950's capacity increased from 15.2 million tons in 1955 to 19.7 million tons in 1960. As shown in figure 3, increases in production followed a similar pattern. In addition to guiding investment decisions and providing aid to the industry, the Government imposed price controls on steel. In the post-war period, through the early 1960's, the French industry was one of the least profitable in the European Coal and Steel Community (ECSC).

During the 1960's, the French Government became actively involved in implementing a series of modified 4-year plans designed to increase the efficiency and international competitiveness of French steelmakers. The plans were put into effect following a 1966 industry study which revealed that the French steel industry lagged behind its foreign competitors both in productivity and optimal plant size. During the time the plans were in effect, steelmaking capacity continued to grow at roughly the same rate as in prior periods, increasing to 28.8 million tons in 1970. Production followed suit, rising to 26.2 million tons in 1970.

The 1970's proved to be difficult years for the French steel industry and its counterparts in the industrialized countries. In response to growth in world steel demand and optimistic projections for continued growth, expansion plans were implemented in the early 1970's which resulted in significant capacity being brought on line by the mid-1970's. Anticipated growth in demand did not occur, however, and capacity utilization has not exceeded 73 percent since 1975. From a peak level of 37.1 million tons in 1975, capacity was trimmed to 32.6 million tons by 1982, with plans for further reductions to be implemented.

The depression had a pronounced effect on the financial health of the French steel industry. When the industry faced collapse in 1978, the Government and banks intervened and took effective control of the industry by converting a part of the industry's debt of more than $8 billion into equity in new holding companies. The defacto nationalization became law under legislation passed in 1981. Although employment and capacity have been reduced through restructuring efforts, financial losses have continued through 1982. Restructuring resulted in a concentration of operations in two companies. These two companies accounted for about 85 percent of French crude steel production in 1982.

FIGURE 3.--CRUDE STEEL PRODUCTION AND USABLE CAPACITY, FRANCE, 1950-82



<u>West Germany</u>.--The West German steel industry is the largest in Western Europe and in 1982, was the fourth largest in the world. At the end of World War II, however, the industry needed rebuilding, due to the substantial damage incurred during the war. Major restructuring began in 1952, with the formation of the ECSC. The process was assisted by large-scale investment in the steel industries begun in 1951. In 1952, the Government allowed internal steel prices, which had been controlled, to rise in order to provide sufficient profit for financing capital projects. By the late 1950's, many of the companies that had been decentralized following the war again began to reacquire control of their former establishments, often doing so through the purchase of a firm's stock.

Steelmaking capacity in West Germany rose during the decade of the 1950's, from 27.4 million tons in 1955 to 38.9 million tons in 1960. As shown in figure 4, production followed suit, with the country regaining its former position as the world's third largest producer in 1955. During the 1960's, growth continued with capacity increasing to 58.5 million tons in 1970. Profitability, however, was relatively low with after tax profits averaging only 1.9 percent of total assets during 1962-65. 1/

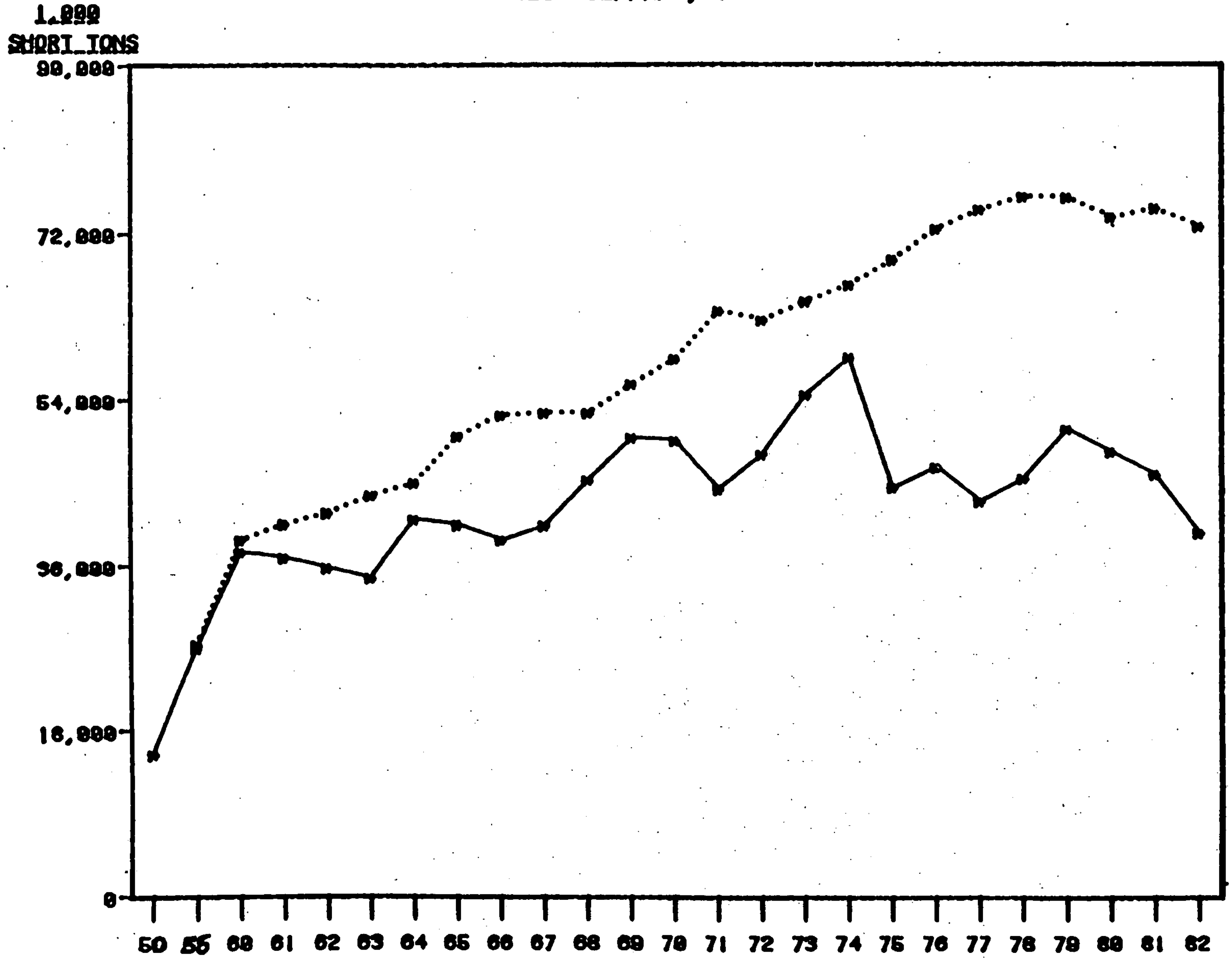
As in the case of France, optimistic forecasts for continued growth in demand for steel led to a rapid expansion of capacity during the 1970's. By 1978, capacity had reached a peak of 75.9 million tons, representing a 30-percent increase over that of 1970. Demand was not great enough to support this level of capacity however, and as a result, utilization rates have not exceeded 67 percent since 1975. The restructuring since 1978 has had the effect of reducing capacity, to 72.7 million tons in 1982, a level which was still substantially higher than production. Presently, concentration in the industry is relatively high, with four of the nine major firms accounting for about 60 percent of total crude steel production. All but one of the major firms are privately owned.

<u>United Kingdom</u>.--The British steel industry has had a long history of direct Government involvement. In 1950, the Labor government nationalized the 14 integrated United Kingdom steel producers. The following year, however, 13 of the 14 companies were denationalized and returned to the private sector by conservative government legislation. Beginning in 1953, the prices and plans of the steel industry became subject to review by the Iron and Steel Board, which was responsible for examining and approving specific projects and, in consultation with industry, setting maximum prices for products. As indicated in figure 5, during the 1950's capacity and production increased. Capacity grew from 22.1 million tons in 1955 to 28.9 million tons in 1960.

Although formal government price controls eased in the 1960's, from 1964 onward intervention continued through administrative guidance. In 1967, the Government renationalized about 91 percent of the industry, an action that affected 14 companies operating 22 plants. Capacity increased slightly during the decade of the 1960's, climbing to 32.3 million tons in 1970.

1/ J. Singer, <u>Trade Liberalization and the Candian Steel Industry</u> (Toronto: University of Toronto Press), 1969, p. 51.

FIGURE 4.--CRUDE STEEL PRODUCTION AND USABLE CAPACITY, WEST GERMANY, 1950-82



SOURCE: EUROSTAT, AISI, AND THE OECD.

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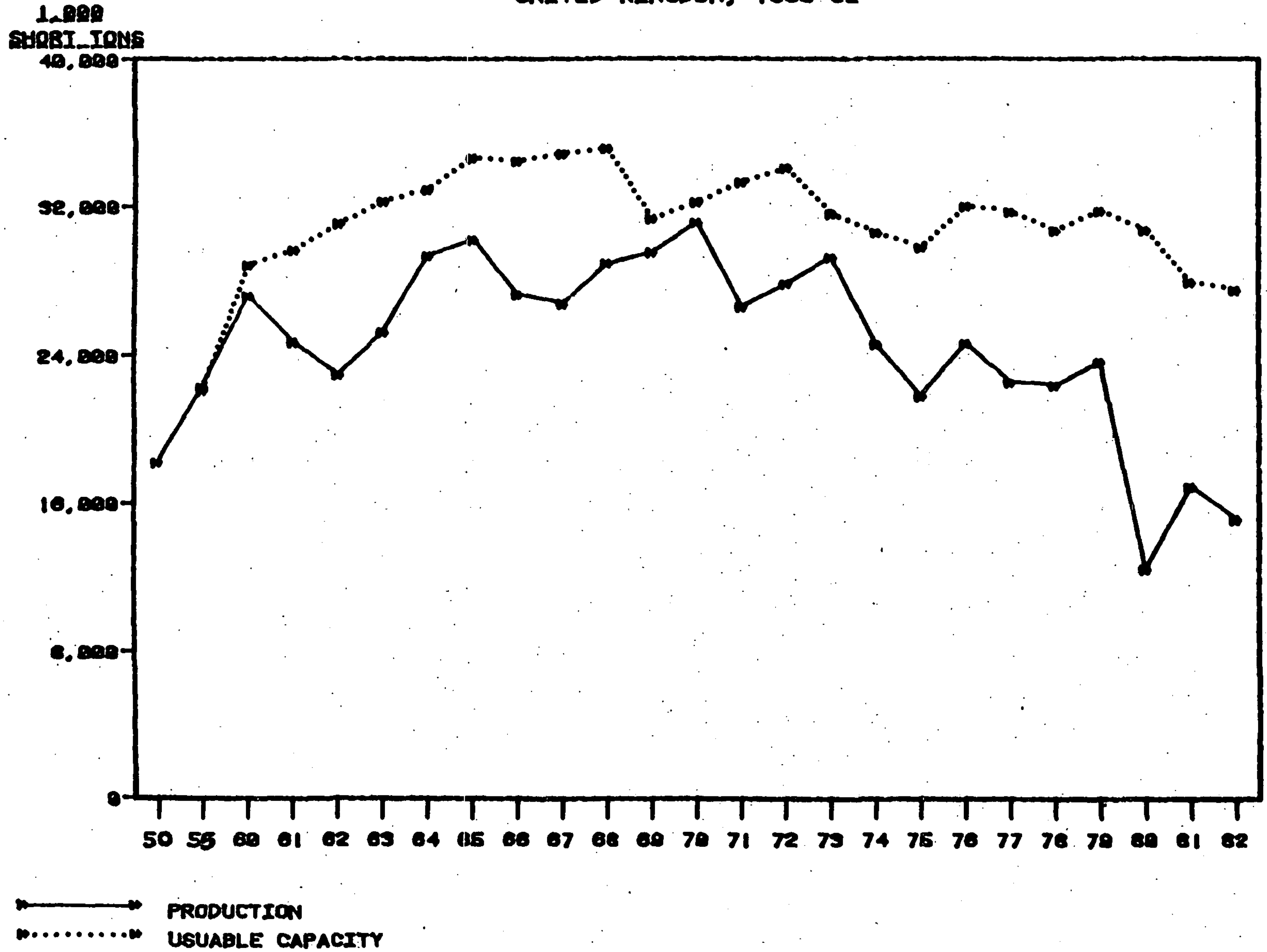
FIGURE 5.—CRUDE STEEL PRODUCTION AND USABLE CAPACITY, UNITED KINGDOM, 1950-82



SOURCE: EUROSTAT, AISI, AND THE OECD.

The firms nationalized by the Government faced a number of problems in the late 1960's and 1970's, including substantial debt, outdated equipment, and surplus capacity. As capacity continued to increase in the 1970's (to a peak of 34.1 million tons in 1972), the increases were smaller in comparison with the capacity expansions undertaken in other countries. Capacity utilization, which averaged 84 percent in the 1960's, rose to 87 percent during 1970-74, before falling to an average of 58 percent during 1979-82. A particularly low production level in 1980 reflects the effect of an industry strike.

During the 1980's, substantial restructuring occurred in the British steel industry, as many facilities operated by the nationalized company were permanently closed in an effort to return the industry to profitability. As a result of these measures, crude steelmaking capacity was cut, to about 27.5 million tons per year in 1982.

U.S. market

U.S. demand for steel over the past three decades has grown, albeit at a relatively low rate. Steel consumption per capita remained at approximately the same level during the period, whereas consumption per dollar of real GNP fell. With respect to the steel markets, about 60 percent of steel shipments are made to the capital goods sector of the economy, making steel demand highly sensitive to capital spending levels. The largest markets for steel are the automotive and construction industries, followed by the container and packaging industry and the machinery and equipment industry.

During the 1950's, U.S. demand for steel averaged 72 million short tons per year; demand increased during the 1960's to an annual average exceeding 100 million tons during 1965-69. Growth continued in the 1970's, reaching a peak of 123 million tons in 1973. In the following years, demand fell, averaging 108 million tons during 1977-81. In 1982, the economic recession in the United States had a severe impact on the industry, as demand fell to 76 million tons, the lowest level since the early 1960's.

U.S. shipments

The growth in steel demand in the United States through the early 1970's was accompanied by a corresponding increase in shipments. To accommodate this growth, steelmaking capacity was added, primarily during the 1950's, so that by 1960 the United States had a capacity of 140 million tons, representing an increase of 59 million tons over the 90 million ton capacity in 1950. By 1974, capacity had increased to 155.5 million tons. Those sectors which accounted for growth in domestic shipments during the past three decades are presented in table 54.

Table 54.--Steel mill products: U.S. shipments by market classification, specified years 1954-82

Market classification	1954	1964	1974	1982
	1,000 net tons			
Distributors 1/	9,948	13,845	20,400	13,067
Automotive	11,793	18,387	18,928	9,288
Construction 2/	9,540	13,600	17,609	8,570
Containers	5,871	6,552	8,218	4,470
Machinery (industrial equipment tools)	3,517	5,338	6,440	2,584
All others	22,484	27,223	37,877	23,588
Total	63,153	84,945	109,472	61,567

1/ Excludes shipments to oil and gas supply houses.
2/ Excludes shipments to oil and gas industry.

Source: Compiled from statistics of the U.S. Department of Commerce.

Note.--Because of rounding, figures may not add to the total shown.

Throughout the period, the five largest markets for steel accounted for 60 to 70 percent of total steel shipments. In 1982 shipments were at a relatively low level, reflecting weakness in the construction and automotive markets. Although some of the weakness is cyclical in nature, structural changes in demand for steel in certain segments have affected steel usage rates. Steel, for example, has encountered competition in the container and packaging industries from aluminum and plastics. In the automotive industry, smaller cars are requiring smaller amounts of steel per vehicle, and some car parts which have traditionally been made of steel are now being made from other materials.

U.S. imports

During most of the 1950's the United States was a net exporter of steel. In 1959, however, the United States became a net importer when a 4-month strike cut domestic production and consumers sought alternate sources of supply. In that year, imports accounted for 6 percent of the market, as opposed to less than 3 percent in previous years. Whereas, import levels fell somewhat in subsequent years, they maintained a higher share of the U.S. market.

In 1965, another year of labor contract negotiations, consumers hedged against a possible strike, which did not materialize, by increasing foreign purchases by over 60 percent, to more than 10 million tons (10 percent of the market). These imports, competitively priced and of good quality, gained market acceptance, as evidenced by increases in imports in the next 2 years. During the labor contract negotiations, in 1968, imports increased by 57 percent (to 18 million tons) and accounted for 17 percent of the market, despite the fact that no strike occurred.

After an increase in imports during the 1971 contract year, steel management and labor worked out an experimental negotiation agreement (ENA) in 1973 which eliminated the threat of a general strike, with binding arbitration in the event of negotiating difficulties. Although the ENA may have helped reduce the tendency toward increased imports in contract negotiation years, imports have continued to make inroads in the U.S. market, as is evident by the record 21.8 percent market share achieved in 1982.

The role of steel imports from EC countries has increased substantially over the past three decades, as their share of U.S.consumption rose from an average of less than 2 percent in the 1950's to 5 percent in the 1960's, and 6 percent during 1978-82. Imports from other countries, notably Japan and newly industrialized countries such as Brazil and the Republic of Korea, have grown even more rapidly however, and the share of EC imports to total U.S. steel imports has fallen from 84 percent in the early 1950's to an average of 32 percent during 1978-82. France, West Germany, and the United Kingdom have been important U.S. suppliers throughout the period, as shown in table 55.

With respect to the composition of imports during the 1950's and 1960's, EC steel shipments to the United States were the relatively simple products, such as concrete reinforcing bars, structural shapes and wire rods. By the 1970's, however, higher valued hot- and cold-rolled sheets were the most significant imports, with pipe and plate imports rising in importance during the 1970's and 1980's.

The United Kingdom and West Germany concentrated on exporting hollow bars and drill steel to the United States in the early 1960's and steel sheets in the late 1960's. French imports shifted from an emphasis on concrete reinforcing bars in the 1950's to wire rods in the 1960's. By 1980, both French and West German imports had shifted to sheets and plates, and British steel, to structural shapes and bars. By 1982, though imports of sheets from France and West Germany remained high, West Germany had moved into oil country tubular goods, and France, into wire rods. British steel imports continued to be high in bars and shapes along with rising imports of oil country tubular goods.

Conditions of competition in the U.S. market

Service, reliability, product quality, and price are four important competitive factors in the steel market. In the past several decades, EC producers were able to establish themselves as reliable suppliers of quality, price-competitive steel products in the U.S. market. A report published by the Federal Trade Commission notes that EC steel prices in the 1960's were lower than those in the United States, enabling increased market penetration. 1/ In addition to commenting on the volatility in EC export

1/ Federal Trade Commission, The United States Steel Industry and Its International Rivals, 1977.

Table 55.--Steel mill products: U.S. producers' shipments, exports of domestic merchandise, imports for consumption, and apparent consumption, by specified years, 1950-82

Year	Producers' shipments	Exports	Imports				Consumption	Ratio of--	
			Total	France	West Germany	United Kingdom		Imports from 3 countries to total imports	Imports from the 3 countries to consumption
	1,000 short tons							Percent	
1950	72,232	2,639	1,014	164	173	64	70,607	39.5	0.6
1955	84,717	4,061	773	156	80	49	81,629	29.3	.3
1960	71,149	2,977	3,359	343	587	209	71,531	33.9	1.6
1965	92,666	2,496	10,383	858	1,178	720	100,553	26.5	2.7
1970	90,798	7,053	13,364	934	1,752	824	97,109	26.3	3.6
1975	79,957	2,953	12,012	754	1,070	573	89,016	20.0	2.7
1978	97,935	2,422	21,135	1,759	2,294	672	116,648	22.3	4.1
1979	100,262	2,818	17,518	1,341	1,868	434	114,962	20.8	3.2
1980	83,853	4,101	15,495	967	1,298	237	95,247	16.1	2.6
1981	88,450	2,904	19,898	1,289	2,164	574	105,444	20.2	3.8
1982	61,567	1,842	16,663	977	2,080	486	76,338	21.3	4.6

Source: AISI statistical reports.

prices, a study published by Putnam, Hayes & Bartlett, Inc., 1/ states that European producers were under considerable pressure to export, especially during 1965-68 and 1975-76. During the former period, growth in EC demand did not match growth in capacity. In the latter period, EC demand fell sharply, leaving producers with substantial excess capacity.

During the past several decades, a number of actions in the area of trade affected conditions of competition in the U.S. steel market. In 1968, certain European countries and Japan reached voluntary restraint agreements (VRA's), which took effect on January 1, 1969, and lasted for 3 years. The VRA's were later extended, in modified form, until 1974. In 1976, quotas were imposed on specialty steel imports (i.e., stainless and alloy tool steel) for a 3-year period which was subsequently extended until early 1980. In 1978, in response to trade problems in steel, the U.S. Government established the trigger-price mechanism (TPM) to monitor prices of steel imports (not including specialty steel) for possible violations of U.S. antidumping laws. The TPM was suspended in March 1980, reinstated in October 1980, and suspended a second time in January 1982, when steel companies filed antidumping and countervailing duty petitions. In October 1982, domestic petitioners withdrew certain antidumping and countervailing duty cases filed against EC countries, bringing into effect an intergovernmental arrangement affecting trade in steel products. Under the terms of the arrangement, EC countries will restrict certain exports to the United States through December 31, 1985. Specialty steel imports were again subject to quotas or increased tariffs for a 4-year period starting in mid-1983, as a result of import relief granted by the President under section 201 of the Trade Act of 1974.

Comparative analysis prepared by World Steel Dynamics indicates that U.S. carbon steel production costs were highly competitive with those of France, West Germany, and the United Kingdom during 1973-80. The appreciation of the dollar since 1980, however, contributed to a marked deterioration in the U.S. position. Comparison at the standard operating rate (SOR) shows how producers' costs would differ, if all were operating at 90 percent of capacity. Costs calculated at actual operating rates are generally higher than those at the SOR, reflecting operating rates below 90 percent during most of the past decade, as shown in the following tabulation (per ton):

Year	Standard operating rate				Actual operating rate			
	United States	France	West Germany	United Kingdom	United States	France	West Germany	United Kingdom
1973	$199	$231	$195	$179	$194	$225	$201	$178
1974	245	296	253	243	243	288	255	254
1975	287	340	283	298	300	367	325	336
1976	306	330	286	289	314	354	324	306
1977	332	341	313	320	342	388	368	354
1978	356	369	349	383	359	412	404	425
1979	399	426	381	432	401	467	423	465
1980	448	479	417	487	473	523	467	602
1981	488	441	389	474	507	480	439	546
1982	523	417	388	444	623	480	467	523

1/ Putnam, Hayes & Bartlett, Economics of International Steel Trade, 1977.

International markets

The major markets for steel over the past three decades have been in Europe (East and West), and North America (table 56). The share of these areas has declined over time, however, reflecting increased consumption in Asian markets and in Latin America. On a country basis, the largest markets in recent years have been the U.S.S.R., the United States, and Japan. Two other country markets, West Germany and the People's Republic of China, have also been large-steel-consuming countries. 1/

Table 56.--Steel: Apparent world consumption, 1/ by regions, 1955-82

Region	1955	1960	1965	1970	1978	1982 2/
	1,000 short tons					
Western Europe	80,468	106,603	126,952	174,185	146,075	135,500
Eastern Europe	63,911	96,716	129,752	167,373	234,094	221,800
North America	118,387	105,027	153,109	151,643	176,334	104,800
Latin America	7,727	9,623	13,746	20,139	36,418	35,600
Africa	4,233	4,828	7,584	9,987	14,998	16,400
Middle East	1,885	2,524	3,803	5,489	17,004	17,100
Asia	17,681	50,430	61,310	118,045	156,804	167,500
Oceania	3,869	5,093	7,407	8,245	6,696	7,000
Total	298,161	380,845	503,663	655,108	788,413	705,700

1/ Crude steel equivalent.
2/ Estimated.

Source: Organization for Economic Cooperation and Development (OECD), and International Iron & Steel Institute (IISI).

In terms of the volume of steel traded, exports as a percent of world steel production have increased over the past three decades from 10-15 percent during the 1950's, to 15-20 percent in the 1960's, and to 20-25 percent in the 1970's. As indicated in table 57, West Germany has been the largest of the exporting countries profiled. The share of U.S. steel exports in the world total fell from an average of about 14 percent in the the 1950's, to less than 2 percent during 1977-81.

1/ IISI, Steel Statistical Yearbook, 1982.

Table 57.--Average share of world steel exports for France, West Germany, United Kingdom, and the United States, specified years 1950-81

Year	France	West Germany	United Kingdom	United States
1950-59	17.5	12.4	10.3	13.7
1960-69	11.0	17.8	6.8	4.3
1970-79	8.3	14.2	3.8	2.9
1977-81	8.0	13.2	3.1	1.9

Source: IISI, United Nations and AISI.

U.S. exports

U.S. exports have accounted for 3 to 4 percent of domestic steel industry shipments over the past three decades. The value of exports rose from $477 million in 1963 to $2.6 billion in 1981, or by 538 percent (table B-36). Canada has traditionally been the largest foreign market, with Mexico rising in importance in recent years.

During the 1950's and the first half of the 1960's, U.S. exports were assisted substantially by a Government program managed by the U.S. Agency for International Development (AID). Under the program, U.S. foreign aid to developing countries was given to encourage structural development in these countries. Although the importance of AID in steel exports has diminished since the mid-1960's, the program continues to be a factor in U.S. export sales.

Industry sources indicate that about one-third of steel exports can be characterized as "continuity" sales, whereby foreign companies with U.S. ties or U.S. ownership purchase steel for their foreign plants. The balance is more on the line of "opportunistic" sales. In 1969-70, for example, U.S. producers exported significant quantities of semifinished steel to Europe and other areas due to shortages. Also, in the 1960's and 1970's, certain domestic producers were suppliers of steel used in the construction of Mexican railroads. In recent years, minimills (i.e., nonintegrated steel producers) have developed export markets for certain products such as wire rod. The strength of the dollar in 1982, however, was probably an important factor in these exports falling 88 percent from that of their 1980 level (table 58).

Table 58.--Steel Mill Products: U.S., West German, and United Kingdom exports, specified years 1950 to 1982

Year	United States	France	West Germany	United Kingdom
	1,000 short ton			
1950	2,840	3,618	1,925	2,634
1955	4,079	5,462	2,849	2,820
1960	2,988	6,076	8,652	3,418
1965	2,508	7,240	10,524	4,328
1970	7,080	8,131	13,277	4,577

Table 58.--Steel Mill Products: U.S., West German, and United Kingdom exports, specified years 1950 to 1982 (continued)

Year	United States	France	West Germany	United Kingdom
	1,000 short ton			
1975	3,063	9,022	17,937	3,516
1978	2,603	11,542	20,411	4,825
1979	2,932	11,568	21,259	4,990
1980	4,239	11,802	21,008	3,066
1981	3,016	11,972	21,162	4,355
1982	1,942	9,811	18,676	3,899

Source: United Nations, Statistics of World Trade in Steel and IISI Steel Statistical Yearbook, 1982.

EC exports

Steel exports accounted for a significant share of EC countries' shipments throughout the past three decades. Although the largest export markets have been in Western Europe, significant trade has developed with other areas, including the United States. The composition of EC steel exports has shifted over the past three decades in response to changing market conditions. Steel mill exports during the 1950's were composed of basic products. By the 1970's the trend in exports had shifted to higher value products such as pipe and plate.

EC steel exports as a percent of world steel exports has experienced a gradual decline. During the 1950's EC exports, in conjunction with those of the United States, composed a major portion of world steel exports. During the 1960's, however, Japanese steel exports began to increase in significance. Throughout the 1970's both Japan and the EC countries accounted for a large share of the world's steel exports. In the past several years however, developing nations and their emerging steel industries have begun to take a larger share of the world's steel export market, reducing the shares of both the EC and Japan.

Of the three countries profiled, exports as a percent of total production have been highest for France (an average of 60 percent) followed by West Germany (59 percent) and the United Kingdom (32 percent) during 1978-82. France's traditional export markets have been other Western European countries. During the 1950's French steel was exported most often to West Germany and Switzerland. By the 1960's, Italy and Belguim-Luxembourg also became large recipients of French steel exports. In the latter part of the 1960's, the United States became one of France's top three export markets. Throughout the 1970's West Germany continued to be France's largest customer of exported steel until 1978, when Italy became the largest.

West Germany's traditional export markets during the 1950's were the Netherlands, Sweden, and Switzerland. During the early 1960's, however, France displaced the Netherlands as West Germany's number one steel export market. By the mid 1960's, the United States had become one of West Germany's top three export markets for steel and remained so until the late 1970's when the U.S.S.R. became the largest recipient.

British steel exports during the 1950's were traditionally to Australia and Canada, with other former colonies also important export markets. By the mid-1960's, the United States had become the United Kingdom's largest steel export market, a position it maintained until the late 1970's when West Germany became the United Kingdom's largest export market.

Conditions of competition in international markets

The U.S. steel industry does not compete on a large scale with EC producers in international markets. Whereas EC producers developed sufficient capacity to meet both domestic and foreign demand, U.S. producers, with few exceptions, have constructed facilities inland close to major consuming regions, with the focus on meeting domestic demand. Where competition does occur, price is viewed as a primary factor influencing steel sales. Other factors affecting competition in international markets include the duty-free status EC exports enjoy in other EC countries and in countries which are members of the European Free Trade Association, as well as special ties with various former European colonies.

Telecommunications Apparatus

Description and uses

In the United States the manufacturers of "telecommunications apparatus" 1/ comprise a number of separate, distinct, and nonhomogeneous industries. Although a common thread connecting the industries might be the electrical and electronic nature of the products manufactured, the industries themselves have little else in common. The industries which comprise the telecommunications group include: 2/

- Telephone and telegraph apparatus,
- Commercial radio and television apparatus; radar, navigation search, and detection apparatus, and
- Consumer audio, radio, and television apparatus.

Due to the distinct character of each of the industries, and for purposes of presentation, the following discussion will be separated into three industry groupings based on the four digit SIC numbers under which most of the industries are classified--telephone and telegraph apparatus, radio and television communication equipment, and radio and television receiving sets.

Telephone and telegraph apparatus, (SIC No. 3661).--The telephone and telegraph apparatus covered in this heading are those electrical and electronic products used to transmit, route, and receive information principally by wire. 3/ The information may be forwarded by means of analog or coded signals. The coded signals may be telegraph, teletype, or most recently, digital in format. Telephone and telegraph equipment includes, but is not limited to, the ubiquitous telephone set (instrument), teletypewriters, switching equipment (both central office and private), and wire transmission and reception apparatus. Special-purpose business machines used for billing and accounting of toll fees are also included. However, products not covered by this heading include such items as radio links (both land and satellite), 4/ tape recorders used as telephone answering devices, telephone poles, cable and wire, hardware, or individual components such as transistors, resistors or capacitors.

Radio and TV communications equipment, (SIC No. 3662).--This group of industries principally produces commercial and military electronics products. The major industrial subheadings under SIC No. 3662 are--

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1/ Group 724, Standard International Trade Classification, Revised.

2/ Not included in telecommunications, SITC group 724, are the industries which produce computers, calculators, and other automatic data processing machines, the industry producing magnetic tape recorders and tape players; or the industry producing components such as resistors, capacitors, wire, coils, or semiconductor products.

3/ The distinction between wire transmission and radio transmission apparatus is sometimes imprecise, since electronic apparatus can be used for either wire or radio transmission or reception.

4/ Included with "Radio and television communication equipment (SIC No. 3622)."

- o Communications systems and equipment, (except broadcast) including microwave and mobile communication equipment,
- o Broadcast, studio, and related electronic equipment,
- o Intercommunication equipment, alarm systems, and traffic control equipment,
- o Search and detection, and navigation and guidance systems and equipment, and
- o Electronic systems and equipment, n.e.c.

Alarm systems, components, and traffic control apparatus are not included in SITC No. 724, and will not be included in the following analysis.

Communications apparatus includes radio communication equipment used for radiotelephonic, radiotelegraphic, and radiobroadcasting transmission and reception and is divided into three categories--radio receiver, radio transceivers, and other radio apparatus and parts. 1/

Radio receivers are designed to receive signals on one or more bands in the radiofrequency spectrum. The commercial entertainment bands, AM and FM, are popular bands found on radio receivers. Many receivers are also able to intercept frequencies in the short-wave frequency range, 1.6 MHz to 30 MHz. Special-purpose receivers can intercept signals on other bands, such as the fire, police, ambulance, aviation, or military bands.

Radio transceivers are combinations of transmitters and receivers, which share electronic components and circuits. Transceivers allow for two-way communication (transmitting and receiving) using a single unit; however, these units operate in only one mode at a time and are not capable of simultaneously receiving and transmitting. Many consumer-type tranceivers are for use in the Citizens Band (CB). They provide short-distance radio communication service for the business or personal activities of licensees. Commercial- and military-grade transceivers are used for land mobile, aviation, public safety, and military communications.

Other radio apparatus includes transmitters, antennas, and parts of radio apparatus. Transmitters emit the radio signals which are intercepted by radio receivers. Transmitters may be used in communications systems where there is one source of intelligence and many, widely dispersed reception sites. An example of such systems is commercial radio transmission wherein many receivers can tune into one radio station.

Antennas are used in both the transmission and reception of radio signals. They act as the transducer between the transmitter or receiver and free space. Since radio communications systems are generally designed to

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1/ Radio communication is the transmission of intelligence through the use of electromagnetic waves propagated through the medium of free space. It is accomplished by impressing sound or coded data onto a radiofrequency electromagnetic wave which is then radiated by a radio transmitter through its antenna. When tuned to the proper frequency, a radio receiver detects this electromagnetic wave, separates the intelligence from the wave, and converts the intelligence back into the original form.

transmit or receive on a limited segment of the radiofrequency spectrum, so are antennas. This allows them to function more efficiently in either transmitting or receiving radio signals.

Radio communication apparatus has many uses due to the almost instantaneous contact between a transmitter and many, widely dispersed receivers without any physical link such as a cable. Some of the more important uses are in commercial radio (AM and FM), public safety (police, fire protection, and ambulance service), transportation (land, sea, and air carriers), and military and space communications.

Also included under this telecommunication heading are special-use military electronics such as electronics countermeasures (ECM) equipment, electronics intelligence and intercept (ELINT) equipment, and sonar equipment.

Radio navigational aids (NAVAIDS) are electronic systems which assist the navigator or surveyor in determining position. Radar is an electronic transmitter and receiver which can determine the distance from its antenna to objects around it. The general applications of NAVAID's are both navigational (in aircraft and ships) and early warning or detection (radar).

This report also includes radio remote control equipment. Such apparatus is used to electrically control the actions of a machine at a distance without interconnecting wires. Certain classes of guided missiles as well as garage door openers use radio remote control apparatus.

Television cameras are used to convert optical images into coded electromagnetic signals for a number of purposes. The electrically coded image may be amplified and transmitted for immediate use, it may be stored, or it may be analyzed. Typically the television camera is used to originate live programs for entertainment broadcasters, as a surveillance monitor, as a teaching aid (also originating live programs), and more recently by consumers as a substitute for motion-picture film cameras.

Commercial television apparatus is covered by SIC No. 3662 and consists of broadcast and studio equipment, transmitting equipment, cable television equipment, and other miscellaneous equipment, including closed-circuit televison systems and video players. Broadcast and studio equipment and transmitting equipment make up the bulk of this group and are used principally in commercial establishments.

Radio and TV receiving sets, SIC No. 3651.--This group of industries generally produces consumer electronics products. In addition to radio and TV receivers, SIC No. 3651 includes consumer high-fidelity components, including audio and video recorders and players (not included in SITC No. 724), stereo compact systems, tuners, amplifiers, receivers, TV chassis and other home-type audio equipment, as well as speakers, including loudspeaker systems and loudspeakers sold separately, microphones, home-type electronic kits, and commercial sound equipment.

Complete television receivers include both color and monochrome receivers which are fully assembled and ready to function when purchased by the consumer. These television receivers range in screen size from about 2 inches for small battery-operated portable units to 25 inches for console televisions and up to 6 feet for projection-type televisions. Consumers use television receivers principally for entertainment either by watching broadcasts directly off the air or by using their sets with newer devices such as video games or video tape recorders. Television receivers may also be used as display units for home computers. Combinations of television receivers and radio receivers, and combinations of TV receivers or radio receivers and other electronic products such as clocks, tape players, or tape recorders are also covered in this SIC grouping.

"Microphones, loudspeakers, and related equipment" consists of microphones, loudspeakers, audiofrequency electric amplifiers, electric sound amplifier sets, headphones, and parts of the foregoing. Microphones convert sound waves into electrical signals which may then be used as an input for sound recording devices or audiofrequency amplifiers. They are used in conjunction with home entertainment tape recorders, professional sound studio recording systems, and public-address systems for live performances. They are also used extensively in industrial applications as sound-sensing devices.

Loudspeakers and headphones convert electrical signals into sound. Loudspeakers are used in consumer entertainment appliances, consumer high-fidelity stereophonic systems, public address or sound re-enforcement systems, musical instrument amplifiers, and automobile radio sets. Head phones are used with consumer audio products, in professional sound studio recording, and in radio and television broadcasting stations.

Audiofrequency electric amplifiers boost weak electric signals from an input source to levels which can drive a loudspeaker or headphone at a useful sound level. Such amplifiers are used with many kinds of consumer audio products, such as radios, high-fidelity stereo equipment, and public-address systems.

Electric sound amplifier sets are principally composed of the foregoing items and are designed to operate together. Amplifier sets are used in public-address and sound reenforcement systems where there is a need to communicate with groups of people in large areas such as auditoriums, airports, railway and bus stations, and sports stadiums.

U.S. industry profile

Telephone and telegraph industry.--The telephone and telegraph apparatus manufacturing industry has existed since the invention of the telephone in the 1880's. The industry is very concentrated; the two largest manufacturers are owned by the two largest operating companies.

Until recently the phone system in the United States was a privately owned, legally franchised monopoly. Recently, there has been a Government-directed shift from publicly regulated monopoly to a deregulated, competitive market. In the manufacturing and supplying industry, the four largest U.S. firms have an estimated 85 percent concentration ratio. With the deregulation of the terminal equipment market and the proposed divestiture of the large telephone operating companies there has been a significant increase in imports and in the number of U.S. suppliers of telephone and telegraph apparatus. Until the divestiture is completed, the largest U.S. manufacturer is prohibited from selling on the open market. After the breakup of the parent company, this manufacturer will be free to sell any products in any market, as well as to continue to supply products to it's former affiliates.

It is estimated that the number of establishments supplying telephone and telegraph apparatus has increased from 90 in 1963 to 270 in 1981. Although the largest manufacturer is closing down and consolidating inefficient, older plants in anticipation of a competitive market place, new companies are being established to supply new and innovative products to the deregulated market.

Persons employed in the manufacture of telephone and telegraph apparatus include the most highly skilled engineers and scientists in the world. The manufacturing segment of the industry employs moderately to highly skilled workers with a diminishing use of unskilled labor. In the manufacture of telephone and telegraph products there is some large volume production such as the telephone instrument. Employment is estimated to have risen only moderately from 90,000 persons in 1963 to 148,000 in 1981, or 2.8 percent per year. The efficient use of new manufacturing processes and automation have kept quality high, cost low, and contributed to the moderate increase in employment.

Radio and TV communication industry.--It is estimated that the number of establishments producing commercial electronics products in the United States has increased from 1,100 in 1963 to 2,300 in 1981. The size of the firms engaged vary from multinational conglomerates to the smallest firm producing specialty parts.

Employment is estimated to have increased from 385,000 persons in 1963 to 425,000 in 1981. Skill levels range from scientific and engineering graduate degrees to the moderately skilled technician level. There is little use of unskilled labor in these industries. The products produced are technically complex and are produced in low volume (when compared with consumer electronic products).

Radio and TV receiving sets industry.--These products are purchased for consumption by the general population or consumer. Included are consumer high-fidelity apparatus and audio components, e.g., loudspeakers, radios (clock and regular), automobile radios, radio-phonograph-tape recorder-TV combinations, TV receivers (monochrome and color), and special parts of all of the foregoing. Not included are such products as video and audio tape recorders, since these products are not included in the definition of telecommunications, SITC No. 724. 1/

Prior to and just after World War II, the U.S. radio manufacturers formed a viable and healthy industry. In 1954, there were 84 establishments engaged in the manufacture of radios, of which 53 were specialized at more than 90 percent.

Although television was invented in the United States and tested before World War II, it was not until after the war that final standards were set and commercial, revenue operation commenced. In 1954, there were 59 establishments engaged in the manufacture of TV receivers with 36 of these specialized at more than 90 percent. No dominant producer has emerged, although two U.S. firms have achieved for 20 to 25 percent each of the U.S. market for many years.

Of the 15 U.S.-owned firms manufacturing television receivers in the United States in 1971, 5 remain under U.S. ownership (two of these are a very small regional manufacturer and a private label manufacturer); 3 were bought by Dutch interests; 5 have gone out of business; and 2 were bought by Japanese firms. In addition, 6 Japanese firms, 2 Taiwan firms, and 1 Korean firm have established TV final asssembly operations in the United States. Only one foreign firm (Japanese) established and operates a picture tube manufacturing plant in the United States.

The remaining industries which make up this sector of the overall telecommunication heading are those which make audio high-fidelity products and loudspeakers. As with radio receivers, there was a viable U.S. industry in high-fidelity products until the invention of the transistor. Today, there are no known producers of consumer audio amplifiers, although there are a few manufacturers of commercial grade and special effects amplifiers and apparatus.

Employment is estimated to have decreased from 81,300 persons in 1963 to 60,600 in 1981, after having peaked at 116.700 in 1967. The skill level required for the production of consumer electronic products range from semiskilled to skilled.

1/ Magnetic tape recorders were invented and developed in the United States toward the end of World War II. By 1950, a significant U.S. industry had developed. High-quality reel-to-reel recorders were available for consumer as well as commercial use. In 1954, there were 88 establishments (67 of which were 90 percent specialized) manufacturing tape recorders. The value of shipments was $26 million (which is significant when compared with the $41 million of table model radios shipped in the same year). In the late 1950's, Japan began to export reel-to-reel tape recorders. In the middle 1960's the cartridge tape deck was introduced in Europe and subsequently the cassette recorder in the early 1970's. These newer machines simplified the handling of the magnetic tape and became very popular. In the United States today there are no manufacturers of consumer audio tape recorders or players. There are several manufacturers of commerical equipment. These producers, however, also make machines for other applications such as scientific data recording and digital data. In the mid-1950's, the video tape recorder (VTR) was invented and developed in the United States. These machines have revolutionized the television program production industry. No U.S. firms have manufactured a consumer VTR in the United States. Japan began production of consumer VTR's in the mid-1970's and currently dominates the world market. U.S. imports of VTR's amounted to $478 million, $1,000 million, and $1,032 million in 1980, 1981, and 1982, respectively. U.S. firms are not expected to enter this market.

To the extent that any loss of domestic and/or international market share results from targeting practices, the corresponding absence of each $1 million in production not undertaken by U.S. telecommunication apparatus manufacturers would translate into an estimated 101 workers displaced in all sectors of the U.S. economy (based on 1982 production/employment relationships), according to the staff of the U.S. International Trade Commission, using the BLS input-output model, as seen in the following tabulation:

Industry sector	Displaced employment
	Number
Telecommunications	40
Other manufacturing	30
All other	31
Total	101

European Community and selected member state industry profiles 1/

In 1981, there were 93 firms located in Western Europe with sales of electronics products 2/ in excess of $100 million. Of these 93 firms, 43 had sales of over $500 million, including 15 U.S. companies and 2 Japanese companies. There were 24 firms with sales over $1 billion. These figures are not directly comparable with the telecommunications data shown elsewhere in this report since the sales figures include sales of office business machines and other electronics apparatus not classified as telecommunications in the SITC (Rev. 1). For the top 20 firms reporting research and development (R. & D.) figures, the average expenditures for R. & D. as a percent of sales was 7.7 percent. In the firms with sales of over $1 billion, sales per employee averaged $56,700.

Production of telecommunication-related products amounted to $32.8 billion in 1982. Of this amount, the United Kingdom, France, and West Germany accounted for 65 percent, or $27.4 billion. 3/ Electronics production is reasonably well distributed in the EC with a number of major companies based in the various member states. In most countries, telecommunications systems are owned and operated by the State. 4/ Thus, procurement of the traditional telephone and telegraph apparatus is often made from domestic sources or member nations. The presence of U.S. firms in the EC is not exceptional.

1/ The source for data in this section is the Mackintosh Yearbook of Western European Electronics Data 1983; Benn Electronics Publications Limited; Linton, England.

2/ Little data are available for the Netherlands; the firm with the largest sales of electronics products is located there.

3/ Ibid.

4/ The most notable exception being the United Kingdom which is selling off the telephone system previously owned and operated by the Government.

Exports of telecommunications apparatus by EC member countries have risen tenfold between 1963 and 1981. The EC exports of $8.9 billion in 1981 were almost equal to Japan's telecommunications exports of $9.8 billion. However, if the EC is to be viewed as an economic unit, then the internal trade (shown in table 59) of $3.7 billion in 1981 should be subtracted, making the exports from EC members to non-members $5.2 billion in 1981. Other specific data for the United Kingdom, France, and West Germany are presented in the following sections.

Table 59.--Telecommunications apparatus: Exports of member states to each other, specified years 1963 to 1981

(In thousands of dollars)

Country	1963	1967	1972	1977	1981
France	39,402	50,617	135,310	477,971	723,964
West Germany	52,537	63,407	223,392	384,280	657,758
Italy	25,414	29,460	80,319	360,378	576,530
Netherlands	104,202	119,867	272,141	649,678	575,287
United Kingdom	10,386	17,713	89,038	139,301	408,659
Belgium-Luxembourg	25,699	29,876	129,403	263,625	355,781
Greece	12,719	15,926	74,444	56,084	167,636
Ireland	7,291	5,961	18,586	41,200	100,980
Denmark	11,214	15,766	35,947	80,692	97,256
Total	288,864	348,593	1,058,580	2,453,209	3,663,824

Source: Compiled from the official statistics of the United Nations.

United Kingdom.--In 1981, production of telecommunications apparatus was approximately $6.8 billion. Employment in the industry was estimated to be 201,000 workers. The value of exports was $1.5 billion.

France.--In 1981, production of telecommunications apparatus was valued at approximately $7.5 billion and employment was estimated to be 126,000 workers. Although these figures indicate much higher productivity than in the United Kingdom or West Germany (see below), it is more likely an error in the data due to the considerable variation between countries in statistical reporting. France exported $1.1 billion of telecommunications products in 1981.

West Germany.--In 1981 production of telecommunications goods was valued at approximately $7.1 billion, and the work force producing these products was estimated at 196,000 persons. The value of exports from Germany was $3.1 billion. (This is not believed to be a statistical error; other sources confirm West Germany's high propensity to export.)

U.S. market

Until recently, the U.S. the market for telephone and telegraph apparatus was restricted to telephone and telegraph operating companies. These companies provided complete telephone and telegraph service to the consumer with minor exceptions. The customer premises equipment (CPE) was rented to the consumer for his use. 1/ All other apparatus such as switching and transmission was housed in facilities owned by the operating company. In a short period of time CPE has gone from a closed operating company market to an open consumer market. Although this new market is immature, imports have already made significant penetration. Even the largest of U.S. producers are purchasing imports for their own private label.

Telephone and telegraph switching and transmission equipment primarily is supplied by U.S. manufacturers, particularly by those which are currently the captive suppliers of the operating companies.

The diversity of the products covered under radio and TV communication equipment reflects a diversity of markets. These markets have one thing in common--they are, with few exceptions, commercial markets. For instance, radio navigational aid and radar apparatus are sold to the commercial aviation and military markets. A second market segment is for the retrofit of new equipment to extend the life of older airplanes. A third segment would be for surface-mounted equipment used in ships and airports. These markets rise and fall with the aerospace industry and military budgets.

Communications markets are relatively mature. Commercial radio and television broadcasters are a typical market for studio equipment of all types. Land mobile radio equipment is sold to police and fire departments, utilities, delivery and taxi services, and to the general public. (The new cellular, land mobile, frequency reuse, two way, radio telephone systems are expected to create a large commercial market.) In addition, a market segment has developed for cable television apparatus. This market was principally a rural one 25 years ago. Recently, most of the growth has taken place in suburban and urban areas. This market was relatively small until the urban growth. It is now attracting foreign competitors.

The markets for radio, TV receivers, and high-fidelity audio apparatus are mature consumer markets. It is estimated that over 50 percent of the TV market is for replacements, although there is a strong second-set market. In radios, the cheaper portables and table-top models are now disposable, in that the cost of repair usually is far in excess of the replacement cost. In the case of high-fidelity entertainment equipment, purchasers are always in pursuit of that "better sound." Technical innovations from time to time help to increase sales. For example, the digital audio disc (DAD) 2/ is being introduced by Japanese companies with much fanfare.

1/ In 1968, a landmark court case was decided in favor of allowing customers to attach nontelephone company equipment to that owned by the telephone companies. Individual consumers may now own and connect duly registered telephone apparatus to the public switched network.

2/ A phonograph like record on which the music has been digitally encoded.

U.S. shipments

The data in the following three tabulations are based on the official statistics of the U.S. Department of Commerce. The deflation index used is for manufactured goods and is based on the year 1972.

Telephone and telegraph apparatus.--U.S. producers' shipments increased from $1.5 billion in 1963 to $12.2 billion in 1981, as shown in the following tabulation (in millions of dollars):

Item	1963	1967	1972	1977	1981
Shipments	1,538	2,248	3,974	7,095	12,177
Shipments adjusted for inflation (1972)	1,860	2,581	3,974	5,050	6,150

The deflated measure of output shows more than a threefold increase in the 18-year period. The compound annual growth rate based on the constant 1972 dollar value of shipments was 6.9 percent per year.

Radio and TV communication equipment.--U.S. producers' shipments increased from $5.9 billion in 1963 to $25.3 billion in 1981, as shown in the following tabulation (in millions of dollars):

Item	1963	1967	1972	1977	1981
Shipments 1/	5,936	7,302	8,040	13,048	25,299
Shipments 1/adjusted for inflation (1972)	7,177	8,383	8,040	9,287	12,777

1/ The value of shipments may not be completely accurate between 1963 and 1977 since it is believed that classified military electronics was not shown in these figures during the Vietnam conflict.

The deflated measure of output shows that output increased by 78 percent during the 18-year period. The compound annual growth rate during this period based on the constant 1972 dollar value of shipments was 3.3 percent per year. This is consistent with the type and maturity of products produced.

Radio and TV receivers.--U.S. producers' shipments increased from $1.9 billion in 1963 to $5.6 million in 1981, as shown in the following tabulation (in millions of dollars):

Item	1963	1967	1972	1977	1981
Shipments	1,853.2	3,316.1	3,465.1	4,584.4	5,634.5
Shipments adjusted for inflation (1972)	2,240.9	3,807.2	3,465.1	3,262.9	2,997.2

As can be seen, the output in constant dollars of the industry which produces radio, televisions, and audio consumer products has been declining since 1967. This is consistent with the demise of the radio industry and the decline in TV and audio manufacture in the United States.

Telecommunications.--Summing all of the values of shipments from the preceding subparagraphs gives the total value of telecommunications product shipments and is shown in the following tabulation (in millions of dollars):

Item	1963	1967	1972	1977	1981
Shipments	9,327	12,866	15,479	24,728	43,110
Shipments adjusted for inflation (1972)	11,278	14,771	15,479	17,600	21,924

Total telecommunications shipments increased from approximately $9.3 billion in 1963 to $43.1 billion in 1981. Using the constant 1972 dollar value of shipments, output of all of the industries included in the telecommunications sector increased 1.9 times between 1963 and 1981. The compound annual growth rate based on the constant dollar value of shipments was 3.8 percent per year.

U.S. imports

The value of U.S. imports of telecommunications products increased eighty-sevenfold during the period 1963-81, as shown in table B-1. During the same period, the value of imports of telecommunications products from the European Community increased roughly sixfold and the value of U.S. total shipments increased about fivefold. The overall low value of imports from the EC does not warrant analysis by type of product except in so far as a particular EC-member country is strong in a particular product area.

Import penetration from all countries and from the EC.--The U.S. import penetration ratio in the United States for telecommunications products from all countries has increased consistently from 0.9 percent in 1963 to 14.4 percent in 1981, as shown in table B-1. Import penetration has been paced by consumer imports principally from Japan and the Far East.

Although EC exports of high-fidelity apparatus to the U.S. consumer market were strong in the 1950's and early 1960's, 1/ such products now account for very little of the EC's exports to the United States. There is a technical barrier between consumer television markets in the United States and Europe in that the U.S. and European transmission standards are quite disparate. 2/ Recently, however, the introduction of digital technology to the European consumer-TV receiver may allow European producers to manufacture sets which are easily made compatible with any set of standards worldwide.

Balance of trade.--The balance of trade in telecommunications between the United States and the EC has been positive for the United States from 1963 through 1981, as shown in table 60.

Table 60.--Telecommunications apparatus: U.S. trade surplus with EC member states, specified years 1963 to 1981

(In thousands of dollars)

Year	Value
1963	1/ 19,477
1967	1/ 78,334
1972	1/ 125,503
1977	1/ 274,826
1981	577,152

1/ Data for the Netherlands are not available.

Source: Official statistics of the United Nations.

Conditions of competition in the U.S. market

Competition in the U.S. market is predicated on vigorous antitrust and anticartel enforcement, and strong consumer advocacy. The United States is the world leader in all facets of electronics technology and the production thereof. The finest research laboratories in the world, which are privately owned and operated, exist in the United States. Most of the recent electronic technological progress rests on the invention in a private U.S. research laboratory, funded by the private sector, of the transistor and subsequent solid-state electronics technology.

1/ Extremely high-quality loudspeakers, microphones, and amplifiers were introduced in Europe. The consumer cartridge and cassette tape recorders are of European invention. These products became instantly popular in the United States.

2/ Unlike the United States and Japan, which use essentially the same system for transmission of images.

European research and development in telecommunications is of equal quality to that done in the United States though not as broad in scope or as large in scale. The quality of European telecommunications products is reputedly quite high. In many cases, there are differing technical standards which act as nontariff barriers. In most cases, U.S. and EC prices are comparable. There have been no cases brought before the U.S. International Trade Commission alleging dumping of telecommunications products from the EC.

International markets

Telephone and telegraph apparatus markets.--As noted in the section on the "U.S. Industry," except for the United States, telephone and telegraph systems are Government owned and operated. This results is essentially closed markets for the hardware used by the operating companies. The operating companies, if they do not own the producers, have established long-term relationships with their local suppliers. U.S. firms which supply foreign countries with telephone and telegraph products have usually done so from subsidiaries within the procuring country. Establishment of close relationships with embryonic postal telephone administrations is important to long-term supply contracts. Telephone systems in general must have long-term logistic support and a fixed set of design criteria and specifications in order to make logistic support economical. That is, all parts of the system must be integrated and designed to work reliably over long periods of time with all other parts of the system. Thus, initial suppliers have the opportunity to use the learning curve over long-term contracts.

Terminal equipment is more easily designed to interface with the telephone systems than other types of telephone equipment such as central office switching equipment. Terminal equipment by its very nature is hung on the ends of the network, not integrated into the network. Therefore, there is a more open global market for terminal equipment than for transmission and switching equipment. The United States is currently negotiating with other countries to deregulate or open up their markets for such equipment in order to increase the flow of trade.

The United States has two natural markets for telephone and telegraph products--Canada and Mexico. English-speaking countries such as the United Kingdom and Australia are also in the top 10 U.S. export markets. In addition, countries which are engaged in massive expansion and upgrading of their telephone and wire telecommunications systems are also good markets for the U.S. manufacturers. Two examples of such countries are Korea and Saudi Arabia.

Radio and TV communications markets.--The variety of the products which comprise this group of commercial electronics products and systems do not allow a single description of market structure. For instance about one-third of U.S. exports of commercial electronics systems and components are of navigational aids (NAVAIDS), radar, and radio remote control apparatus. The United States is a worldwide supplier of aviation electronics (avionics) apparatus; the EC is also a strong supplier.

Radio and TV receiving set markets.--Once certain technical standards have been established, it becomes difficult if not impossible to make major technical changes in the market. For instance, Japan and the United States use a fully compatible set of TV transmission standards. Europe uses several different standards which are not compatible with those used in the United States and Japan. It is unlikely due to the huge consumer investment in television receivers (not to mention the commercial investment in broadcast equipment) that the United States or Japan will ever adopt the European transmission system or vice versa.

Therefore, worldwide markets for consumer radios and TV receivers tend to be technically segregated. However, there are no technical reasons why consumer products cannot be produced to foreign specifications and standards and sold outside of the producing country. (See Import penetration from all countries and from the EC).

Japan has captured the largest worldwide market share in consumer electronics products. The Japanese are willing to produce equipment to any set of technical specifications. According to Japanese statistics, Europe is the largest purchaser of consumer electronics produced in Japan; the United States a close second, and all of Asia a close third. 1/

Telecommunications equipment markets.--The United States is the fifth largest nonmember market for EC telecommunications products. The EC, however, is the largest importer of U.S. telecommunications products. Though the balance of trade is positive for the United States, Japan exports more to the EC than does the United States. U.S. and EC producers compete in the Saudia Arabian telecommunications market. In 1977, Saudi Arabia imported 103.4 million dollars' worth of equipment from the EC and 138.7 million dollars' worth from the United States. By 1981, EC exports to Saudi Arabia had increased to $494 million, nearly four times the amount of U.S. exports to Saudi Arabia that year. Another major market for EC producers is Libya. Saudi Arabia and Libya were the top two nonmember state markets for EC telecommunications products in 1981.

U.S. exports

In 1963, exports were $473 million; and in 1981, $3.5 billion (table B-41). The compound annual growth rate over the period of 18 years was 11.0 percent. In the most recent period, 1977-81, the compound annual growth rate was 13.3 percent. Considering that there was an 11-percent decline in the value of exports, when comparing the value of exports in 1967 with that in 1963, the low 18-year growth rate is not unexpected. The U.S. export ratio, defined as the value of exports of telecommunications products divided by the value of shipments, has shown some improvement in the past 18 years. This ratio was lowest (3.7 percent) in 1967 and highest (8.6 percent) in 1977. In 1981, the export ratio was down slightly (8.1 percent).

1/ As noted before, however, Japanese subsidiaries supply the U.S. market with consumer electronics products from Taiwan, Korea, Hong Kong, Singapore, and other Southeast Asia nations.

Exports to the EC

West Germany and the United Kingdom have been the principal European markets for U.S. exports. In 1981, these two countries received $481 million of U.S. exports, 63 percent of all U.S. telecommunication exports to the EC as a whole.

EC exports

In 1981, the total value of exports from all member of the EC was $8.9 billion (see table 61). Of this amount, 41 percent, or $3.7 billion, was internal trade between member states (table B-42). Between 1963 and 1981, trade between members varied, ranging from 31 to 41 percent of the value of exports of all members. Overall, EC telecommunications exports to the United States have increased very slowly and in no period exceeded 1 percent of U.S. apparent consumption. West Germany and the United Kingdom remained the chief European sources throughout the period, and in 1981, accounted for 32 percent of U.S. telecommunications equipment imported from the EC (table 61).

Table 61.--Telecommunication apparatus: Exports between EC member states, exports to nonmembers, trade with the United States, and U.S. exports to the EC, specified years 1963 to 1981

(In thousands of dollars)

Trade flows	1963	1967	1972	1977	1981
Total exports by EC members	888,032	1,122,740	2,572,342	6,933,564	8,883,395
Exports to EC members by members 1/	288,864	348,593	1,058,580	2,453,209	3,663,824
Exports to nonmember nations 1/	599,168	774,147	1,513,762	4,480,355	5,219,573
Exports to the United States 1/ by EC members	33,088	49,842	64,207	102,889	192,249
Exports to the United States by Japan	133,855	348,787	1,111,072	2,325,986	3,051,649
Exports from the United States to the EC	52,565	128,176	189,711	377,715	769,639

1/ Data for the Netherlands are not available for 1963, 1967, 1972, and 1977, and are, therefore, not included.

Source: Compiled from official statistics of the United Nations.

Conditions of competition in international markets

Many U.S. producers have established manufacturing facilities in countries which encumber foreign access to their markets but permit foreign investment in manufacturing facilities for domestic production. U.S. producers have been successful in establishing such facilities in the European Community, but, to date, have not been as successful in establishing them in Japan.

In recent years, developing countries have emulated certain developed countries, demanding a specified amount of domestic content in products sold in their markets. However, in developing countries lacking an established production base, foreign manufacturers find market access easier.

The principal strength of U.S. producers of telecommunications equipment in international markets is their technological edge. U.S. manufacturers are unquestionably superior to foreign producers in the designing, manufacturing, and installation of most telecommunications products.

Textiles

Description and uses

The raw materials used in the manufacture of textiles are primarily fibers, either natural or manmade. The most popular textile fibers used are cotton and manmade fibers (such as polyester, nylon, acrylic, rayon, and acetate); wool, silk, and other vegetable fibers maintain a very small but important share of consumption. In 1982, the U.S. textile industry consumed 11.1 billion pounds of fiber, including 3.2 billion pounds of polyester, 2.5 billion pounds of cotton, and 1.9 billion pounds of nylon.

Fibers can be processed directly into fabrics but are usually manufactured into yarns which are subsequently made into textile mill products (primarily fabrics). The term "textiles" includes the products classified in Standard Industrial Classification Code 22 and covers yarn, 1/ cordage, thread, fabric (including some finished products manufactured in fabric mills), fabricated knit apparel, floor coverings, and various miscellaneous products, such as felt and lace goods, paddings, waste, and filling.

Textile fabrics are formed by several methods, including weaving, knitting, braiding, crocheting, felting, bonding, and laminating. Weaving accounts for the largest amount of textile fabric; knitting is second, much of which becomes a finished apparel product, such as hosiery and underwear.

The apparel industry is the leading consumer of textile products. In the United States, about 40 percent of the textile output is consumed in the production of apparel. Other important markets for textile products include homefurnishings (sheets, blankets, drapes, and so forth) and industrial products such as tires, dryer felts, filter bags, rubber reinforcement, motor-vehicle interiors, nets, cordage, geotextiles 2/, and medical and surgical products.

U.S. industry profile

The United States is the world's leading textile producer, with shipments totaling almost $50 billion in 1982. The number of U.S. textile mills totals more than 5,000, about two-thirds of which employ less than 100 workers each. These mills are primarily located in the Southeast, especially in the Carolinas and Georgia.

The distribution of textiles is complex. Manmade fibers and continuous filament yarns are obtained from the manmade-fiber producer; cotton and wool are obtained through brokers, merchants, and cooperatives as well as directly from producers. Most fiber is manufactured into yarn by integrated textile

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1/ Substantial quantities of the yarns used in textile manufacture are made by manmade-fiber producers and need no further processing before being used in the production of fabric. Such yarns are in continuous (unbroken) form and are considered raw materials.

2/ Geotextiles are fabrics which are permeable and are used on or below the surface of the earth as soil stabilizers or components of an engineered structure.

mills, and specialized yarn spinners. However, a substantial amount is distributed directly to product manufacturers, that use the fiber largely as filling. Manufactured yarns are sent to fabric mills, or directly to product manufacturers, particularly those engaged in producing knit apparel. Most fabric is sold in finished form to end users by the textile mill that produces it. However, some yarn and fabric are handled by intermediaries (textile wholesalers) which arrange for yarn or fabric to be manufactured on contract. Finally, there are yarn and fabric processors which dye, finish, print, embroider, coat, or laminate textile products before they are sold to product manufacturers.

Prior to the 1960's, small firms employing less than 200 workers accounted for most U.S. textile production. However, during the 1960's and the 1970's, large firms employing over 1,000 workers accounted for more than one-half of textile production. This shift was the result of several factors. The newer and more efficient textile equipment which delivered larger production loads became more expensive and required higher capital outlays. Thus, only large firms could justify major investments in newer equipment. The search for higher profit margins caused many firms, which produced yarn or fabric exclusively, to integrate vertically, and/or horizontally. Therefore firms grew larger, either through acquisition or by establishing new production facilities, to enable them to make a greater variety of textile products; diversification enabled them to cope with the fluctuating demand of one or a few textile products. Other factors, such as dependable supplies of raw materials, wider distribution of market outlets, and production in larger and more economical operating units, also contributed to the concentration of production in fewer firms. By the 1980's, the largest 50 firms in textiles accounted for 50 percent of the industry's total output; the largest 15 firms, for roughly 35 percent. 1/

New plant and equipment expenditures by U.S. textile producers increased during 1967-82. Such expenditures were $0.7 billion in 1967, $1.1 billion in 1972, and $1.3 billion in 1977 and 1982. Profits in the textile industry have traditionally been below the average for all manufacturing industries; since 1967, they have averaged annually under 3 percent of sales, whereas net profits for all manufacturing industries have averaged annually around 5 percent of sales. Net profits in the textile industry totaled about $700 million in 1967 and 1972, $800 million in 1977, and $900 million in 1982.

Average employment in the textile industry has declined since 1967. In 1967, the industry employed 957,000 workers; in 1972, 986,000 workers (representing an increase of 3 percent); in 1977, 910,000 workers (representing a decline of almost 8 percent); and in 1982, 750,000 workers (representing a decline of 20 percent). The decline since the 1970's was caused chiefly by increased productivity, increased imports, and stagnant domestic demand. Although the annual output per worker increased from $20,700 in 1967 to $62,900 in 1982, real output as measured by the Federal Reserve Board's Industrial Production Index increased by 33 percent during 1967-76, and declined by 6 percent during 1976-82, to produce an overall net increase of 25 percent during 1967-82. In 1967, textile employees worked an average of 40.9 hours a week and received $2.60 per hour; in 1972, the average was 41.3

1/ American Textile Manufacturers Institute, Washington, D.C.

hours per week and $2.74 per hour; in 1977, 40.4 hours and $3.99 per hour; and in 1982, 37.4 hours and $5.83 per hour. In 1967, labor accounted for an estimated 51 percent of the value of U.S. textile shipments, but in 1982, labor accounted for less than 39 percent of this value.

To the extent that any loss of domestic and/or international market share results from targeting practices, the corresponding absence of each $1 million in production not undertaken by U.S. textile manufacturers would translate into an estimated 41 workers displaced in all sectors of the U.S. economy (based on 1982 production/employment relationships), according to the staff of the U.S. International Trade Commission, using the BLS input-output model, as seen in the following tabulation:

Industry sector	Displaced employment
	Number
Textile	21
Other manufacturing	8
All other	12
Total	41

EC and selected member state industry profiles

Since 1973, employment and output in the textile industry in the European Community have declined. The EC textile industry employed 1.9 million workers in 1973, 1.7 million in 1980, and 1.5 million in 1982. Yarn production has declined consistently since 1976, when it was 5.1 billion pounds, to 4.0 billion pounds in 1981. Similarly, woven fabric production declined, from 3.1 billion pounds in 1976 to 2.2 billion pounds in 1981.

The Community's textile mills consumed approximately 7.6 billion pounds of fiber in 1980, the second largest world textile market after the United States. Four nations--West Germany, France, the United Kingdom, and Italy--accounted for about 80 percent of this fiber consumption in 1980. These four nations are also the largest textile traders in the European Community, accounting for over three-fourths of its exports and imports. Outside the EC member states, the United States has been both an important source and market for textiles produced in the European Community. Although West Germany is one of the largest EC textile exporters, the United States has not ranked among its top 10 markets in many of the years during the 1960's and 1970's. However, the United States has traditionally been among the 10 leading textile markets for Italy, the United Kingdom, and France, each of whose textile industries are briefly described below.

Italy.--Since 1976, Italian yarn and fabric production has declined. In 1976, yarn production totaled about 1,600 million pounds. But in 1980, yarn production dropped to 1,555 million pounds, and in 1981 it dropped to 1,383 million pounds. Woven fabric production showed the same trend. It was 766 million pounds in 1976, but declined to 519 million pounds in 1980, and then to 455 million pounds in 1981.

In 1980 the industry consumed an estimated 1.6 billion pounds of textile fibers. Capacity data for certain sectors of the industry include cotton spinning, where capacity decreased from 693 million pounds in 1979 to 671 million pounds in 1980, but rose to 700.5 million pounds in 1981, and fabric weaving, where capacity also declined from 639 million pounds in 1979 to 594 million pounds in 1980; it also rose to 664 million pounds in 1981.

Employment in spinning and weaving declined from 105,000 workers in 1974 to 94,000 in 1977. In 1980 and 1981 the decline continued; in 1980, there were 85,189 employees in spinning, weaving, and finishing, and in 1981, there were 82,280 workers in the same sectors. Much of the decline in number of mills and employment has been the result of extensive modernization programs designed to gradually reduce the labor component in textile production. With encouragement from the Government, there is presently a continuing emphasis for fewer companies to provide more efficient output of various textiles.

Italian textiles are used chiefly in apparel, although substantial quantities are also consumed by industrial and homefurnishing manufacturers. The textile distribution pattern consists of distributors or agents, textile wholesalers, yarn processors and fabric makers, and dyers and finishers. However, much of the distribution is now carried out by individual textile manufacturing companies which sell directly to product manufacturers. In Italy, as in the United States, manmade-fiber producers sell directly to various end users such as fabric and product makers, yarn processors, independent fabric makers, and contract textile finishers.

The United Kingdom.--The textile industry in the United Kingdom consumed an estimated 1.7 billion pounds of textile fibers in 1980. The weaving sector, the largest sector in the United Kingdom textile industry, had a capacity of 40,200 looms in 1978, 31,300 looms in 1980, and 20,300 looms in 1982. The woven fabric producers operated at 85.4 percent of capacity in 1978, 83.6 percent in 1980, and 83.5 percent in 1982.

The industry in the United Kingdom consists of many small, highly diversified companies. Several holding companies control a number of these small, chiefly vertically integrated companies. In 1973, the British textile industry consisted of 3,691 companies; in 1972, 2,679 companies; in 1977, about 2,500 companies; and in 1982, slightly over 2,000 companies. The number of employees in textiles declined from 605,000 in 1963 to 438,000 in 1972; the number rose to 480,200 workers in 1977, but again declined to 317,900 in 1981. The steady decline in the number of companies and workers is due to the consolidation and elimination of many nonprofitable operations, lower textile production (textile output dropped 26 percent from 1978 to 1980 and a further 13 percent from 1980 to 1982), and equipment modernization.

Like the United States and Italy, British textiles are used chiefly in apparel and secondarily in industrial and household products. The British textile industry distributes its products through yarn processors, fabric makers, dyers and finishers, and a great number of intermediaries (especially contract textile manufacturers and textile wholesalers) some of whom belong to large textile organizations. The numerous intermediary companies are necessary in order to market the wide variety of specialized textiles still produced by the many small firms in the industry.

France.--The textile industry of France had an estimated $16 billion in sales in 1980. 1/ Capacity utilization had typically been about 75 percent, though for 1981 and 1982, it is estimated to have been slightly lower. The French textile industry is renowned as a diversified producer of high-quality textiles. The industry in France is recognized as a world leader in the production of certain types of textiles of fine quality and design, such as wool worsteds.

In 1980, there were 2,555 French establishments manufacturing an entire range of textile products, less than the number of textile firms operating in 1974 and 1977 but above those in existence during 1982. The textile industry employed 347,900 workers in 1974; 297,300 workers in 1977; and 243,900 workers in 1980. Like other important textile nations in the European Community, France has suffered a decline in number of plants and employment in the late 1970's and early 1980's chiefly because of foreign competition, consolidations (encouraged by the Government to make the remaining plants more competitive), and the large-scale modernization of plants.

French textiles are used chiefly in apparel (especially dresses, coats, suits, trousers, and underclothes), household textiles (particularly sheets, pillowcases, curtains, and draperies), and various industrial products (including tarpaulins, filter products, industrial felts, and automotive equipment). The French textile distribution system is composed of yarn processors, fabric makers, and contract textile dyers and finishers. However, since the early 1980's the number of contract dyers and finishers, and textile wholesalers, has been decreasing due to industry modernization. Many of these formerly independent functions are being performed by larger organizations (with government encouragement); in addition, some textile manufacturers are taking on the tasks of dyeing and finishing their own products and arranging for direct distribution to customers.

U.S. market

During 1967-82, U.S. consumption of textiles increased 50 percent from $20.1 billion in 1967 to $30.4 billion in 1977, and continued to increase annually until it reached $50.0 billion in 1981. Then in 1982, a stagnant market reduced consumption to $47.2 million.

Factors of demand for textiles in the United States are price, consumer need, fashion, comfort, and new or improved industrial and household applications. In the area of fashion, designers play an important role in the textile industry, one that has been increasing in recent years especially in developed countries. In the area of improved industrial applications, new uses include geotextiles, portable liquid storage tanks, inflatable convention and stadium coverings, heat-resistant products for space exploration, net-enclosing breeding pens for sea fish, and snow chains for automobiles. Lastly, new or improved household applications include disposable diapers, wiping cloths, reusable bags, abrasive cloths, and temporary storage closets.

1/ Much of the French textile data presented here was obtained from Bulletin 82/6 published by Comitextil, Brussels, Belgium.

U.S. shipments

Quantity data are not available for overall U.S. shipments of textiles. However, domestic fiber consumption, almost all of which enters into some form of textiles, is considered an indirect measurement of textile shipments. These data, along with the value of textile shipments, are shown, for selected years, in the following tabulation:

Year	Domestic consumption of fibers 1/ (million pounds)	Value of textile shipments 2/ (million dollars)
1967	9,365	19,797
1972	12,318	28,064
1977	12,729	40,551
1982	11,140	47,217

1/ Textile Organon, a publication of the Textile Economics Bureau, Inc., March 1983, p. 38.
2/ U.S. Department of Commerce, Bureau of the Census.

From 1967 to the middle 1970's, the quantity of domestic textile shipments increased. Afterwards, in the late 1970's and the early 1980's, the quantity of shipments gradually declined, principally due to sluggish demand for apparel and homefurnishings and increased imports of apparel, which further limited opportunities for domestic textile shipments. In contrast, from 1967 to the early 1980's, the value of shipments rose. The increase in the 1970's can be attributed in part to real growth in U.S. textile consumption. However, the increase in the late 1970's and early 1980's is largely the result of inflation and the production of more expensive textile products.

U.S. imports

In value, U.S. imports of textiles increased from $0.8 billion in 1967 to $1.5 billion in 1972, and to $1.8 billion in 1977, and to $2.8 billion in 1982. Though quantity data are not available for overall textile imports, imports of cotton, wool, and manmade fibers, which account for a preponderant share of all textile imports, totaled an estimated 3.7 billion equivalent square yards in 1972, 2.2 billion equivalent square yards in 1977, and 2.2 billion equivalent square yards in 1982. 1/. The quantity of textile imports, as measured in equivalent square yards, of cotton, wool, and manmade fibers, has trended irregularly lower since 1972. The major cause of the lower imports has been the sharp drop in imported manmade-fiber yarns. During this period, the domestic users of textile yarns have generally shifted to U.S.-

1/ Square yard equivalents of imports of textiles are an overall measure of trade in physical terms. Textiles, except fabrics which are measured in actual square yards, are assigned a conversion factor which converts other physical units (such as pounds of yarn) into square yard equivalents.

produced yarns which became abundant and competitively priced as larger and more cost-efficient U.S. plants were established. In addition, the institution of the Multifiber Arrangement for textile products of manmade fibers in the early 1970's contributed to the reduced imports. In the years after 1972, imports of textiles have typically accounted for between 4 and 6 percent of domestic consumption.

The European Community was a moderate supplier of textile imports to the U.S. market during the 1970's and early 1980's. The European Community accounted for generally between 15 and 30 percent of U.S. textile imports and less than 2 percent of U.S. textile consumption. EC imports increased from $117 million in 1967 to $477 million in 1972; then remained at a level of between $400 million and $600 million per year through the early 1980's.

Textile imports from Italy, the United Kingdom, and France, which accounted for over 70 percent of U.S. imports from the European Community in 1982, however, increased since the late 1960's. In 1967, Italy furnished $42 million in textile imports; in 1972, $79 million; in 1977, $113 million; and in 1982, an estimated $204 million. Next in importance, the United Kingdom supplied $47 million in textile imports in 1967; $93 million in 1972; $94 million in 1977; and an estimated $101 million in 1982. Lastly, France shipped $27 million in textiles to the United States in 1967; $61 million in 1972; $62 million in 1977; but only an estimated $57 million in 1982, down 29 percent from the $80 million in 1981.

Conditions of competition in the U.S. market

Textiles imported from the European Community generally compete in the U.S. market by offering products with special attributes such as handwork yarnsfrom France, handwoven wool fabrics and axminster carpets from the the United Kingdom, expensive spun rayon fabrics from West Germany, wilton carpets from Belgium, and silk twills, other fancy-colored silk fabrics, and wool blends from Italy. Over $10 million of each of those products was imported annually in recent years. Some textiles from the Community have captive consumers in the U.S. market because of quality, special uses, and consumer preferences. However, by far the largest portion of the U.S. market uses basic textiles (fabrics, yarns, and so forth) and is competitive primarily on a price basis. Consequently, those textiles with lower overall unit costs prevail, particularly spun yarn, polyester-cotton apparel fabrics, denims, sheetings, and knit apparel fabrics. In these products, U.S. firms have a decided advantage. During the last decade, both the European Community suppliers and the U.S. suppliers have retained rather consistant shares of the U.S. textile market.

International markets

Data on world consumption of textiles are not available. However, the approximate size of the world's largest markets can be measured by the total amount of textile fibers consumed. According to the Food and Agriculture Organization of the United Nations, 1/ the United States is the world's

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1/ World apparel fibre consumption survey, 1983.

largest consumer of textile fibers, 1/ consuming approximately 10.6 billion pounds in 1980. In that year, the European Community was the second largest market, consuming 9.5 billion pounds; Union of Soviet Socialist Republics (U.S.S.R.) was the third largest market, consuming about 9.0 billion pounds; the People's Republic of China (China) was the fourth largest market, consuming about 8.9 billion pounds; and Japan was the fifth largest market, consuming almost 4.2 billion pounds. Within the European Community, the leading textile markets in 1980 were West Germany, which consumed 3.1 billion pounds of textile fibers; France and the United Kingdom, which each consumed 1.7 billion pounds; and Italy, which consumed 1.6 billion.

In 1981, the European Community was the world's largest source of textiles, accounting for $7.5 billion in exports. It was also the world's largest buyer of textiles, importing an estimated $7.4 billion in 1981. Of the four leading textile producing nations in the European Community--West Germany, Italy, France, and the United Kingdom--only Italy exported more textiles than it imported in 1981.

The United States exported $3.6 billion in textiles in 1981 and imported $3.0 billion, and Japan exported $5.2 billion in the same year and imported $1.5 billion. China has also emerged as one of the largest exporters of textiles in the world with 1981 exports estimated at over $2.0 billion.

The United States and the European Community are the principal foreign textile suppliers for each other's markets. Also, Japan is an important source of textiles for both markets. The European Community is an important supplier of textiles to the U.S.S.R. The United States and the European Community fall behind Japan and Hong Kong as suppliers to China because (1) the Asian countries' generally have a price advantage, (2) these two countries have traditionally been an important source of imported textiles for China, and (3) these two countries are closer to China both geographically and culturally.

U.S. exports

The value of U.S. textile exports was about $531 million in 1967; then it rose to $779 million in 1972 and to $1,959 million in 1977. Since 1977, exports grew annually, and reached $3,619 million in 1981. However, stagnating demand and the strong U.S. dollar in 1982 produced a decline of 22 percent in the value of exports (to about $2,784 million), the first recorded annual decrease in the value of U.S. exports of textiles since 1974.

In the 1960's and the 1970's, the United States' most important export markets were Canada, the United Kingdom, Australia, and Belgium. Mexico, Saudi Arabia, and Japan have became important U.S. markets in the 1980's. Canada remained the leading U.S. market in 1981 ($583 million) and the United Kingdom was the second ($245 million), Mexico was the third most important market ($157 million), Saudi Arabia was fifth ($140 million), and Japan was

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1/ Cotton, wool, flax, and manmade fibers.

seventh ($113 million). These new markets consumed chiefly fabric, some of which, especially in the case of Mexico, came back into the United States as finished apparel. The 10 top U.S. markets in 1981 included 3 European Community nations--the United Kingdom ($245 million) and Belgium ($117 million), as shown in table B-43.

EC exports

The European Community exported $659 million of textiles to the United States, its largest market outside the Community, in 1981. The three largest markets, all of which were member states, included West Germany ($2.8 billion in textiles from other Community members in 1981), France ($2.2 billion), and the United Kingdom ($1.6 billion), as shown in table B-44. The leading EC textile consuming nations have increased their textile imports from other nations of the Community in almost every year since 1963. In addition, the European Community as a whole (including trade within the Community) has shown an increasing trend in all textile exports from 1963, when they were only $2.9 billion, to 1981, when they reached $18.8 billion. EC exports to the United States also increased during this period, rising from $107 million in 1963 to $659 million in 1981.

Of the European Community nations, West Germany, Italy, Belgium, France, and the United Kingdom have been the largest textile exporters in the last several years. In 1981, the textile exports of West Germany totaled $4.9 billion; Italy, $3.8 billion; Belgium, $2.8 billion; France, $2.5 billion; and the United Kingdom, $2.2 billion. Except for West Germany and Belgium, the United States has ranked among the 10 top markets for these countries for most years since 1970. The largest EC textile exporters to the United States in 1981 were Italy (which exported $236 million worth of textiles to the United States), the United Kingdom ($127 million), and France ($80 million) (table B-45, B-46, and B-47).

Conditions of competition in international markets

Producers in West Germany, the United Kingdom, France, and Italy compete with each other for foreign textile markets as well as for their own markets. Likewise, U.S. exporters compete with individual nations' producers rather than with the European Community as a whole.

The European Community has an advantage over the United States in the area of duties and nontariff barriers. The European Community has preferential duty arrangements with many countries outside the Community. Also within the Community, U.S. products are dutiable whereas trade among EC members is duty-free. In addition, rules of origin, in effect since 1973, are applied by the European Community in its preferential trade arrangements 1/.

1/ The European Community's rules of origin apply to the trade between the Community and its numerous preferential partners, including the seven nations of the European Free Trade Association (EFTA). The rules provide that preferential tariff treatment be extended by the Community to goods from the exporting area which have been wholly produced or imported and substantially processed, within the exporting area. As this rule is interpreted in the (continued)

Other less significant restrictions that exist in European Community markets include import licensing requirements, country-of-origin labeling, listing of fiber content, and listing of samples on shipping documents.

The EC member states also have a trade advantage over the United States in Africa and Asia due to their past cultural, social, and economic relationships. However, when U.S. and EC exporters compete in new markets, which are now becoming more important to the textile industry, each competes equally well in quality, price, service, and product diversity.

(Continued)

1/ European Community, apparel, homefurnishings, or other end products made in the Community from fabrics produced in the United States and many other countries would not qualify for preferential status because it only passes through one level of processing. Consequently, manufacturers in the EFTA or the European Community might hesitate to purchase U.S.-made fabric because articles produced from such fabric would have a higher tariff when shipped between the two areas than articles made with EC or EFTA-produced fabric.

APPENDIX A

U.S. INTERNATIONAL TRADE COMMISSION

NOTICE CONCERNING PHASE 2 OF INVESTIGATION NO. 332-162

The report on phase II findings will be submitted to the Subcommittee on Trade no later than April 23, 1984.

Public hearing: A public hearing in connection with the second phase of this investigation will be held in the Commission Hearing Room, 701 E Street, NW., Washington, D.C. 20436, beginning at 10 a.m. on January 4, 1984. All presons shall have the right to appear by counsel or in person, to present information, and to be heard. Requests to appear at the public hearing should be filed with the Secretary, United States International Trade Commission, 701 E Street NW., Washington, D.C. 20436, no later than noon, December 16, 1983.

Written submissions: In lieu of or in addition to appearances at the public hearing, interested persons are invited to submit written statements concerning the investigation by December 16, 1983. Commercial or financial information that a submitter desires the Commission to treat as confidential must be sumitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. All submissions requesting confidential treatment must conform with the requirements of § 201.6 of the Commission's *Rules of Practice and Procedure* (19 CFR 201.6). All written submissions, except for confidential business information, will be made available for inspection by interested persons. All submissions should be addressed to the Secretary at the Commission's office in Washington, D.C.

By order of the Commission.

Issued: October 19, 1983.

Kenneth R. Mason,

Secretary.

[FR Doc. 83-29140 Filed 10-25-83; 8:45 am]

BILLING CODE 7020-02-M

[Investigation No. 731-TA-44; Final—Court Remand]

Import Investigations; Sorbitol From France

Determination

In response to an order of the Court of International Trade in the case of *Roquette Freres v. United States* (Court No. 82-5-00636, Slip Op. 83-71, entered July 18, 1983), and on the basis of the records[1] developed in investigations Nos. 731-TA-44 (Final) and 731-TA-44 (Final—Court Remand), the Commission determines that as of the date of the Commission's determination in investigation No. 731-TA-44 (Final), an industry in the United States was materially injured by reason of imports from France of crystalline sorbitol which had been found by the Department of Commerce to be sold in the United States at less than fair value (LTFV), but that an industry in the United States was not materially injured or threatened with material injury, and the establishment of an industry in the United States was not materially retarded, by reason of LTFV imports from France of liquid sorbitol.[2, 3, 4]

Background

On March 29, 1982, the Commission notified the Secretary of Commerce of its determination that, based on the record developed during the course of investigation No. 731-TA-44 (Final), an industry in the United States was materially injured by reason of imports of sorbitol from France which had been found by the Department of Commerce to be sold in the United States at LTFV.

The Commission's determination was subsequently challenged in the Court of International Trade by Roquette Freres, the French producer and exporter of sorbitol. On June 21, 1983, the Department of Justice, representing the United States, entered a motion to suspend all further proceedings in the court action pending a determination by the Commission on remand. The basis for the request centered around discrepancies in the administrative record of investigation. On July 18, 1983, the Court ordered the Commission to issue a determination on remand regarding sorbitol from France within 60 days of the order, or by September 19, 1983. Because of a later request for a public hearing in connection with the investigation, the Commission requested, and the Court granted, a 30-day extension in the investigation, until October 17, 1983.

Notice of the institution of the remand investigation was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, D.C., and by publishing the notice in the Federal Register on August 3, 1983 (48 FR 35186). Notice of the hearing to be held in connection with the investigation was published in the Federal Register on August 29, 1983 (48 FR 39165). The hearing was held in Washington, D.C. on September 19, 1983, and all persons who requested the opportunity were permitted to appear in person or by counsel.

The Commission transmitted its determination and views to the U.S. Court of International Trade on October 17, 1983. A public version of the views of the Commission is contained in USITC Publication 1441, October 1983 (Sorbitol from France, investigation No. 731-TA-44 (Final—Court Remand)).

Issued: October 17, 1983.

By order of the Commission.

Kenneth R. Mason,

Secretary.

[FR Doc. 83-29141 Filed 10-25-83; 8:45 am]

BILLING CODE 7020-02-M

[1] The "record" is defined in § 207.2(i) of the Commission's Rules of Practice and Procedure (19 CFR 207.2(i)).

[2] Sorbitol is provided for in item 493.66 of the Tariff Schedules of the United States.

[3] Chairman Eckes did not make separate determinations regarding crystalline and liquid sorbitol, instead determining that an industry in the United States was materially injured or threatened with material injury by reason of LTFV imports of sorbitol from France. Therefore, Chairman Eckes dissents with respect to the Commission's negative determination on liquid sorbitol.

[4] Commissioner Stern also determines that a clarification of her determination as of the date of the Commission's determination, rather than a new determination based on new data, results in a reaffirmation of her original determination, i.e., that an industry in the United States was materially injured by reason of LTFV imports of sorbitol from France.

[Investigation No. 337-TA-133]

Import Investigations; Certain Vertical Milling Machines and Parts, Attachments, and Accessories Thereto, Decision Not To Review Initial Determination Terminating Respondent on the Basis of a Consent Order Agreement; Issuance of Consent Order

AGENCY: U.S. International Trade Commission.

ACTION: The Commission has determined not to review the presiding officer's initial determination (I.D.) (Order No. 49) granting a joint motion to terminate this investigation with respect to respondent King Machinery, Inc. (King) on the basis of a consent order agreement.

Authority: 19 U.S.C. 1337, 47 FR 25134, June 10, 1982 and 48 FR 2025, May 5, 1983, and §§ 210.53(c), 210.53(h), 211.20 and 211.21 of the Commission's Rules of Practice and Procedure (19 CFR 210.53(c) and (h) and 19 CFR 211.20 and 211.21).

SUPPLEMENTARY INFORMATION: The Commision published notice of the I.D. in the Federal Register of September 23, 1983, 48 FR 43413. The Commission has not received a petition for review of the I.D. or comments from government agencies or the public.

The Commission has determined not to review the initial determination terminating King as a respondent and issuing the consent order. The consent order allows King to continue importing and selling vertical milling machines

(48 FR 45816, Oct. 7, 1983), the Commission hereby revises its schedule as follows: The prehearing conference will be held on January 24, 1984; the hearing will be held on February 9, 1984; and the Commission's final determination shall be issued on or before March 19, 1984.

EFFECTIVE DATE: October 17, 1983.

SUPPLEMENTARY INFORMATION: The Commission instituted this final antidumping investigation effective September 19, 1983, and scheduled a hearing to be held in connection therewith for December 7, 1983 (48 FR 45480, Oct. 5, 1983). On October 7, 1983 (48 FR 45216), the Department of Commerce extended the investigation in response to a request from the China National Import and Export Corporation, the exporter of the subject merchandise in the People's Republic of China. The effect of the extension was to change the scheduled date for Commerce to make its final determination from November 28, 1983, to February 1, 1984. Accordingly, the Commission is revising its schedule in the investigation to conform with Commerce's new schedule.

The Commission's hearing, which was to have been held on December 7, 1983, has been rescheduled to begin at 10 a.m. on February 9, 1984, in the Hearing Room, U.S. International Trade Commission Building, 701 E Street NW., Washington, D.C. Requests to appear at the hearing should be filed in writing with the Secretary to the Commission not later than the close of business (5:15 p.m.) on January 27, 1984. All persons desiring to appear at the hearing and make oral presentations should file prehearing briefs and attend a prehearing conference to be held at 10 a.m. on January 24, 1984, in room 117 of the U.S. International Trade Commission Building. The deadline for filing prehearing briefs is February 3, 1984. A public version of the prehearing staff report containing preliminary findings of fact in this investigation will be placed in the public record in January 24, 1984.

FOR FURTHER INFORMATION CONTACT: Larry Reavis (202–523–0296), Office of Investigations, U.S. International Trade Commission, Washington, D.C. 20436.

By order of the Commission.

Issued: October 17, 1983.

Kenneth R. Mason,

Secretary.

[FR Doc. 83–29139 Filed 10–25–83; 8:45 am]

BILLING CODE 7020–02–M

[332–169]

Import Investigations; Competitive Conditions Relating to the Importation of Industrial Molds Into the United States From Canada

AGENCY: United States International Trade Commission.

ACTION: This notice announces the hearing location in connection with the Commission's investigation on the competitive conditions relating to the importation of industrial molds into the United States from Canada.

EFFECTIVE DATE: October 21, 1983.

SUPPLEMENTARY INFORMATION: Notice is hereby given that the public hearing in connection with the investigation will be held beginning at 10 a.m. on February 2, 1984, to be continued on February 3, 1984, if required, in the Westin Hotel, Marquette Room, Renaissance Center, Detroit, Michigan. Notice of the institution of the investigation was published in the Federal Register of September 21, 1983 (48 FR 43109).

FOR FURTHER INFORMATION CONTACT: David Slingerland (202–523–0283), Office of Industries, Machinery and Equipment Division, U.S. International Trade Commission, Washington, D.C. 20436.

By order of the Commission.

Issued: October 21, 1983.

Kenneth R. Mason,

Secretary.

[FR Doc. 83–29142 Filed 10–25–83; 8:45 am]

BILLING CODE 7020–02–M

[Investigation No. 337–TA–144]

Import Investigations; Certain Direct Current Brushless Axial Flow Fans, Commission Decision Not To Review Initial Determination Partially Terminating the Investigation

AGENCY: U.S. International Trade Commission.

ACTION: The Commission has determined not to review an initial determination (I.D.) (Order No. 7) terminating the above-captioned investigation as to U.S. Letters Patent Nos. 4,332,666 and 4,030,005. Accordingly, the I.D. has become the Commission's determination as to this matter.

Authority: 19 U.S.C. 1337, 47 FR 25134, June 10, 1982, and 48 FR 20225, May 5, 1983; to be codified at 19 CFR 210.53 (c) and (h).

SUPPLEMENTARY INFORMATION: The Commission, has received neither a petition for review of the I.D. nor comments from the public or other government agencies.

FOR FURTHER INFORMATION CONTACT: William E. Perry, Esq., Office of the General Counsel, telephone 202–523–0499.

By order of the Commission.

Issued: October 20, 1983.

Kenneth R. Mason,

Secretary.

[FR Doc. 83–29144 Filed 10–25–83; 8:45 am]

BILLING CODE 7020–02–M

[332–162]

Import Investigations; Foreign Industrial Targeting and Its Effects on U.S. Industries; Phase II, the European Community and Member States

AGENCY: United States International Trade Commission.

ACTION: This notice announces the start of the second phase of the Commission's investigation of foreign industrial targeting, investigation 332–162, and informs the public of the schedule of that phase, including the scheduling of a public hearing.

EFFECTIVE DATE: October 18, 1983.

FOR FURTHER INFORMATION CONTACT: Dr. John Suomela, Director, Office of Economics (202) 523–3771 or Dr. Henry McFarland (202) 523–1999.

SUPPLEMENTARY INFORMATION: The Commission instituted the present investigation on its own motion under section 332(b) of the Tariff Act of 1930 (19 U.S.C. 1332(b)) on April 19, 1983, at the request of the Subcommittee on Trade of the House Committee on Ways and Means. Notice of instituion of the investigation and the schedule of the first phase of the investigation, which concerned industrial targeting by Japan, was published in the Federal Register of May 11, 1983, (48 FR 21210).

In the original notice of investigation, it was announced that the investigation would be divided into three phases: the first to consider Japanese industrial targeting, the second to consider the European Community's industrial targeting and the third to consider industrial targeting of other major U.S. trading partners.

Phase II will attempt to answer the following questions about EC and member states industrial targeting: (1) Which industries have the EC and member states targeted? (2) What specific practices have the EC and member states used to further the international competitiveness of these industries? (3) What have been the effects of these practices on the competitiveness of the targeted EC industries and their U.S. competitors?

APPENDIX B

STATISTICAL TABLES

Table B-1.--U.S. producers' shipments, exports of domestic merchandise, imports for consumption, total and from EC, apparent consumption, and employment in alleged targeted industries, specified years 1963 to 1982

Industry and year	Producers' shipments 1/	Exports	Imports: Total	Imports: From EC	Consumption 1/	Ratio of-- Imports from EC to total imports	Ratio of-- Imports from EC to consumption 1/	Total employment 1/
	1,000 dollars					Percent		1,000 workers
Aircraft and aerospace:								
1963	6,086,000	1,084,216	91,099	31,280	5,092,883	34.3	0.6	723
1967	9,975,000	1,518,480	249,173	129,516	8,705,693	52.0	1.5	991
1972	11,648,000	2,919,408	409,720	174,448	9,139,312	42.6	1.9	588
1977	16,447,000	5,865,777	600,613	392,627	11,181,836	65.4	3.5	566
1978	19,654,000	8,150,000	660,000	348,337	12,194,000	52.8	2.9	620
1979	26,705,000	9,662,000	1,077,000	583,218	18,120,000	54.2	3.2	713
1980	31,929,000	12,761,000	1,908,000	1,017,713	21,076,000	53.3	4.8	766
1981	35,963,000	14,612,000	2,586,000	1,229,671	23,937,000	47.6	5.1	777
1982	33,858,000	11,638,000	2,481,000	1,250,623	24,701,000	50.4	5.1	739
Apparel:								
1967	20,614,500	126,285	649,224	182,620	21,137,439	31.0	1.0	1,398.0
1972	26,326,900	209,980	1,760,169	236,683	27,877,089	13.7	1.0	1,368.2
1977	34,784,100	560,159	3,734,765	360,310	37,958,706	9.7	1.0	1,334.4
1978	38,747,300	600,503	4,877,977	481,542	43,024,774	9.9	1.1	1,321.8
1979	39,081,700	843,140	5,065,023	1,468,759	43,303,583	9.3	1.1	1,306.2
1980	42,481,500	1,093,495	5,782,703	1,423,475	47,170,708	7.3	1.0	1,307.3
1981	46,018,100	1,128,983	6,857,002	1,399,081	51,746,119	5.8	1.0	1,251.1
1982	47,398,600	846,548	7,506,856	1,430,511	54,058,908	5.7	1.0	1,175.0
Automatic data processing machines (computers):								
1978	17,621,100	4,138,886	755,353	241,690	14,237,567	32.0	1.7	250.7
1979	22,768,500	5,401,821	968,329	301,863	18,335,008	31.2	1.6	292.6
1980	28,111,900	7,483,107	1,159,045	300,276	21,787,838	25.9	1.4	323.7
1981	33,416,400	8,506,198	1,646,771	283,823	26,556,973	17.2	1.1	336.2
1982	33,938,400	8,968,923	2,296,278	315,674	27,265,755	13.7	1.2	340.0
Automobiles and trucks:								
1963	17,517,422	525,234	612,806	511,742	17,604,994	83.5	2.9	330
1967	19,245,485	969,096	3,172,958	782,284	21,449,347	41.3	3.9	321
1972	30,787,231	1,735,942	6,653,267	1,940,436	35,704,556	29.2	5.4	339
1977	45,200,000	4,849,680	13,794,746	3,099,314	58,505,066	22.5	5.7	344
1978	49,492,000	3,641,652	14,097,951	3,400,706	59,948,299	24.1	5.7	300
1979	47,989,000	4,689,282	14,879,520	3,959,567	58,179,238	26.6	6.8	325
1980	40,959,000	3,995,617	17,096,351	4,182,504	54,059,734	24.5	7.7	300
1981	43,771,000	3,996,144	17,993,510	3,516,451	57,768,366	19.5	6.1	250
1982	37,036,000	2,922,854	20,179,508	4,002,101	54,292,654	19.2	7.3	225

See footnotes and end of table.

Table B-1.--U.S. producers' shipments, exports of domestic merchandise, imports for consumption, total and from the European Community, apparent consumption, and employment in alleged targeted industries, specified years 1954 to 1982--Continued

Industry and year	Producers' shipments 1/	Exports	Imports		Consumption 1/	Ratio of--		Total employment 1/
			Total	From EC		Imports from EC to total imports	Imports from EC to consumption 1/	
	1,000 dollars					Percent		1,000 workers
Coal:								
1963	2,632,900	482,055	6,302	1,678	2,157,147	27	2/	146
1967	3,100,500	501,262	3,956	1,791	2,603,194	45	2/	131
1972	5,518,000	1,019,113	5,436	302	4,504,323	6	2/	160
1977	14,043,040	2,730,350	191,694	159,294	11,504,384	83	1	248
1978	23,180,500	2,102,898	485,417	365,165	21,563,019	75	2	237
1979	27,226,500	3,481,061	391,693	245,928	24,137,132	63	1	227
1980	28,308,000	5,037,379	82,896	4,323	23,353,517	5	2/	229
1981	36,005,000	6,005,873	72,337	2,051	29,734,534	3	2/	229
1982	41,670,000	6,440,539	32,829	383	35,262,290	1	1	217
Heavy electrical equipment:								
1963	3/	3/	3/	2,200	3/	3/	3/	3/
1967	3/	3/	3/	7,800	3/	3	3/	3/
1972	1,500,000	550,000	3/	8,400	3/	3/	3/	45
1977	1,270,000	418,600	16,700	4,100	868,100	24.6	.5	40
1978	1,300,000	390,200	19,500	4,600	929,300	23.6	.5	38
1979	1,100,100	395,500	27,800	7,700	732,300	27.7	1.1	35
1980	1,150,000	791,600	44,100	11,500	402,500	26.1	2.9	32
1981	1,175,000	554,500	33,100	10,300	653,600	31.1	1.6	30
1982	1,200,000	570,000	34,500	13,400	664,500	38.8	2.0	29
Iron and steel mill products:								
1963	12,837,000	465,280	633,188	264,200	13,004,908	41.7	2.0	520
1967	15,342,000	414,936	1,292,195	550,900	16,219,259	42.6	3.4	555
1972	19,754,000	603,839	2,793,648	1,137,000	21,943,809	40.7	5.2	478
1977	35,853,000	1,037,077	5,531,317	1,957,000	40,347,240	35.4	4.9	452
1978	42,545,000	1,328,734	6,916,865	2,248,316	48,133,131	32.5	4.7	449
1979	48,071,000	1,878,436	6,966,737	1,981,371	53,159,301	28.4	3.7	453
1980	43,668,000	2,556,617	6,885,355	1,598,772	47,996,738	23.2	3.3	399
1981	51,367,000	2,275,267	10,217,660	3,242,000	59,339,730	31.6	5.5	391
1982	34,577,000	1,601,430	8,958,396	2,921,210	41,933,966	32.6	7.0	289

See footnotes at end of table.

Table B-1.--U.S. producers' shipments, exports of domestic merchandise, imports for consumption, apparent consumption, total and from the European Community (EC), and employment in alleged targeted industries, specified years 1963 to 1982--Continued

Industry and year	Producers' shipments 1/	Exports	Imports		Consumption 1/	Ratio of--		Total employment 1/
			Total	From EC		Imports from EC to total imports	Imports from EC to consumption 1/	
	1,000 dollars					Percent		1,000 workers
Machine tools:								
1963	1,450,600	185,483	44,291	27,600	1,309,408	62	2	84
1967	2,803,800	222,432	203,411	115,900	2,784,779	57	4	104
1972	1,903,900	238,107	139,327	67,700	1,805,120	49	4	78
1977	3,679,900	426,729	485,981	168,900	3,739,152	35	5	84
1978	4,732,800	738,648	835,677	283,200	4,829,829	34	6	95
1979	6,120,500	878,630	1,241,513	370,900	6,483,383	30	6	108
1980	7,216,700	1,093,598	1,518,832	445,000	7,641,934	29	6	109
1981	7,630,000	1,453,067	1,726,144	421,200	7,903,077	24	5	111
1982	5,548,900	1,010,855	1,497,497	382,100	6,035,542	26	6	88
Semiconductors:								
1972	2,704,800	473,550	330,278	4/ 42,482	2,561,528	12.9	1.7	98
1977	4,532,300	1,507,259	1,356,025	4/ 77,014	4,381,066	5.7	1.8	114
1978	5,402,593	1,952,839	1,790,338	90,437	5,240,092	5.1	1.7	134
1979	7,056,797	2,634,823	2,447,662	172,281	6,869,636	7.0	2.5	161
1980	8,993,780	3,477,234	3,348,107	227,528	8,864,653	6.8	2.6	185
1981	9,671,694	3,606,979	3,617,584	208,686	9,682,299	5.8	2.2	105
1982	10,370,000	3,821,715	4,205,115	197,859	10,753,400	4.7	1.8	197
Telecommunications:								
1963	9,327,000	528,928	75,791	33,088	8,874,063	43.7	0.37	558
1967	12,866,100	472,188	497,186	49,842	12,891,098	10.0	0.39	642
1972	15,479,100	698,541	1,774,058	64,268	16,554,951	3.6	0.39	540
1977	24,727,400	2,123,512	3,658,010	102,890	28,385,410	2.8	0.36	534
1978	28,387,526	2,455,643	4,855,383	278,111	30,787,266	5.7	0.90	580
1979	32,334,768	2,682,557	4,817,865	156,638	34,470,076	3.3	0.45	600
1980	38,363,246	3,120,399	5,369,751	157,472	40,612,598	2.9	0.39	631
1981	43,110,500	3,500,430	6,643,570	192,487	46,253,640	2.9	0.42	635
1982	49,608,809	3,554,714	6,690,111	191,161	52,744,206	2.9	0.36	590
Textiles:								
1967	19,797,000	530,932	811,904	117,481	20,077,972	14.5	0.6	956,900
1972	28,064,000	778,779	1,525,100	476,542	28,810,321	31.2	1.7	986,000
1977	40,551,000	1,958,933	1,772,363	435,441	30,364,430	24.6	1.1	910,000
1978	42,281,000	2,225,382	2,200,130	535,076	42,255,748	24.3	1.3	899,000
1979	45,137,000	3,189,351	2,216,363	484,513	44,164,012	21.9	1.1	885,000
1980	47,256,000	3,632,043	2,493,319	525,002	46,177,276	21.1	1.1	848,000
1981	50,261,000	3,618,903	3,045,920	532,053	49,588,017	17.5	1.1	823,000
1982	47,217,000	2,784,108	2,807,479	513,720	47,240,371	18.3	1.1	750,000

1/ Estimated by the staff of the U.S. International Trade Commission.
2/ Less than 0.05 percent.
3/ Not available.
4/ Compiled from official statistics of the United Nations.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Table B-2.—Aircraft and aerospace: U.S. exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Not disclosed 1/	840,115	305,077	406,885	1,186,023	1,711,841
Japan	29,913	70,575	402,354	220,791	1,301,357
West Germany	9,808	135,438	222,721	280,239	1,038,626
Canada	40,672	169,753	193,890	200,990	959,446
United Kingdom	15,013	49,705	214,285	368,915	744,827
Saudi Arabia	10,472	9,789	37,627	272,315	678,933
France	20,694	58,010	151,353	214,230	674,561
Switzerland	10,499	30,707	44,604	88,816	278,663
All other	117,401	689,426	1,245,689	3,033,458	7,223,746
Total	1,084,216	1,518,480	2,919,408	5,865,777	14,612,000

1/ Because of the confidentiality of military aerospace sales, names of specific markets for such exports are not available.

Source: Compiled from official statistics of the United Nations.

Table B-3.—Aircraft and aerospace: EC exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
France	17,639	81,161	181,674	869,259	2,890,061
United States	31,280	129,516	174,448	392,627	1,229,671
West Germany	203,921	44,575	126,277	251,548	747,468
United Kingdom	24,466	28,827	59,671	151,884	680,120
Italy	34,120	15,983	21,260	38,241	425,600
Eygpt	5,062	1,589	1,242	34,109	228,633
Libya	333	5,036	27,390	74,284	209,215
Spain	8,415	32,554	15,129	30,776	195,664
All others	302,056	391,517	648,068	1,593,010	3,433,545
Total	627,292	730,758	1,255,159	3,435,738	10,039,977

Source: Compiled from official statistics of the United Nations.

Table B-4.—Aircraft and aerospace: French exports, by principal markets, by specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
United States	1,654	29,933	31,739	176,436	512,525
United Kingdom	1,651	9,104	27,802	71,891	173,250
Australia	20	36,686	7,823	6,226	148,896
Spain	6,890	22,764	6,659	11,679	147,896
Italy	7,717	5,450	10,841	6,395	146,123
Thailand	4	-	-	53,370	87,895
Japan	415	114	2,874	890	81,049
Singapore	-	-	216	291	76,862
All other	100,116	118,884	252,860	668,749	632,649
Total	118,467	222,965	340,814	995,927	2,006,596

Source: Compiled from official statistics of the United Nations.

Table B-5.—Aircraft and aerospace: United Kingdom exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
United States	9,031	64,973	84,165	129,029	218,703
Spain	1,033	953	3,073	6,628	14,332
Yugoslavia	1,386	423	414	1,941	5,960
Sweden	2,450	1,744	5,386	4,695	5,944
Switzerland	1,856	2,138	11,019	6,797	5,607
United Arab Emirates	-	-	2,885	4,770	4,833
Trinidad & Tobago	199	275	502	861	2,646
Sudan	4,679	432	329	1,262	1,257
All other	108,318	198,841	373,602	704,419	2,371,493
Total	128,952	269,779	481,375	860,402	2,630,775

Source: Compiled from official statistics of the United Nations.

Table B-6.—Aircraft and aerospace: West German exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
France	3,040	37,669	23,922	685,723	2,545,919
United Kingdom	1,473	14,588	13,278	48,902	384,596
Italy	1,469	2,739	832	15,809	132,595
United States	1,773	8,599	12,046	36,203	106,112
Netherlands	46,778	3,259	16,013	51,578	35,065
Spain	158	1,960	2,084	9,166	17,584
Indonesia	-	1	-	11,496	14,697
Switzerland	149	1,763	921	3,459	12,628
All other	5,796	15,954	37,070	52,761	110,028
Total	60,636	86,532	106,166	915,097	3,359,224

Source: Compiled from official statistics of the United Nations.

Table B-7.—Apparel: U.S. exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
Mexico	5,426	10,859	48,289	102,575	202,849
United Kingdom	2,510	2,653	3,128	30,549	89,264
Canada	7,305	10,331	22,029	55,958	70,246
Japan	2,609	2,123	5,473	19,728	69,459
Dominican Republic	949	355	1,418	24,412	67,838
Sweden	2,873	4,497	3,473	13,224	43,537
West Germany	3,471	3,783	7,796	27,654	43,343
Venezuala	1,572	1,647	5,998	21,153	39,824
All other	63,118	90,037	112,376	264,906	502,623
Total	89,833	126,285	209,980	560,159	1,128,983

Source: Compiled from official statistics of the United Nations.

Table B-8.—Apparel: EC exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
West Germany	146,044	266,295	1,148,308	1,930,930	2,398,559
Netherlands	131,630	244,753	606,602	1,225,157	1,386,016
Belgium-Luxembourg	55,503	106,317	359,148	921,394	1,229,109
France	63,398	117,741	340,256	783,942	1,151,411
Switzerland	65,671	95,178	242,391	477,072	738,960
United Kingdom	52,110	56,073	112,187	352,174	718,943
Austria	15,332	32,313	78,292	351,952	523,945
United States	154,351	182,620	236,683	360,310	321,916
All other	270,396	386,992	784,355	2,072,477	2,498,708
Total	954,435	1,488,282	3,908,222	8,475,408	10,967,567

Source: Compiled from official statistics of the United Nations.

Table B-9.—Apparel: French exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
Belgium-Luxembourg	11,212	25,281	117,397	319,575	434,451
Germany	34,040	57,626	271,894	327,812	309,240
Italy	4,322	15,573	59,121	83,425	140,524
Switzerland	10,146	18,916	59,975	88,796	139,517
United Kingdom	7,867	8,464	15,239	54,649	103,874
United States	17,765	21,428	43,941	111,619	98,076
Netherlands	4,773	9,938	31,519	71,006	92,084
Japan	441	931	12,963	43,789	58,560
All other	65,625	60,872	131,882	327,764	513,927
Total	156,191	219,029	743,931	1,428,435	1,890,253

Source: Compiled from official statistics of the United Nations.

Table B-10.—Apparel: Italian exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
West Germany	67,923	137,470	583,133	1,029,592	1,408,279
France	38,193	65,196	177,942	370,703	718,848
Switzerland	17,281	20,516	47,814	129,441	260,958
United Kingdom	18,751	16,025	16,718	130,710	249,997
Netherlands	23,890	41,349	91,826	153,881	223,576
Libya	2,547	5,933	11,786	45,677	221,239
Belgium-Luxembourg	9,448	20,476	47,599	134,280	198,992
United States	95,451	108,761	133,187	146,792	189,700
All other	62,594	87,323	128,575	416,402	823,142
Total	336,078	503,049	1,218,580	2,557,478	4,294,731

Source: Compiled from official statistics of the United Nations.

Table B-11.— Automatic data processing machines: U.S. exports, by principal markets, specified years 1972 to 1981

Market	1972	1977	1981
	1,000 dollars		
United Kingdom	42,313	115,976	705,336
Canada	141,278	213,942	634,574
West Germany	61,584	96,241	542,072
France	55,545	80,137	424,447
Japan	59,420	84,816	394,578
All other	215,096	466,463	2,380,071
Total	575,236	1,057,575	5,081,078

Source: Compiled from official statistics of the United Nations.

Table B-12.— Automatic data processing machines: EC exports, by principal markets, specified years 1972 to 1981

Market	1972	1977	1981
	1,000 dollars		
France	242,819	484,133	780,945
Federal Republic of Germany	231,379	419,043	736,528
United Kingdom	88,901	307,735	674,268
Italy	131,366	219,894	499,381
Netherlands	77,558	169,888	342,411
All other	745,803	1,311,741	2,411,303
Total	1,517,826	2,912,434	5,444,836

Source: Compiled from official statistics of the United Nations.

Table B-13.—Automatic data processing machines: French exports, by principal by principal markets, specified years 1972 to 1981

Market	1972	1977	1981
	1,000 dollars		
West Germany	93,121	136,048	173,260
United Kingdom	19,885	59,363	124,496
Italy	27,363	55,917	92,271
Netherlands	16,314	37,778	56,843
Belgium-Luxemburg	10,514	33,384	56,056
All other	121,497	259,911	397,257
Total	288,694	582,401	900,183

Source: Compiled from official statistics of the United Nations.

Table B-14.—Automatic data processing machines: United Kingdom exports, by principal markets, specified years 1972 to 1981

Market	1972	1977	1981
	1,000 dollars		
West Germany	70,275	143,963	248,927
France	49,042	148,960	215,935
Italy	19,823	34,164	121,067
Netherlands	12,269	35,371	67,004
United States	14,621	37,287	66,693
All other	145,644	275,183	542,754
Total	311,674	674,928	1,262,380

Source: Compiled from official statistics of the United Nations.

Table B-15.—Automatic data processing machines: West German exports, by principal markets, specified years 1972 to 1981

Market	1972	1977	1981
	1,000 dollars		
France	137,074	223,236	279,836
Italy	76,790	110,982	220,502
United Kingdom	51,907	103,616	177,443
Netherlands	32,301	65,870	106,186
Switzerland	26,815	39,806	104,521
All other	254,931	386,041	631,015
Total	579,818	929,551	1,519,503

Source: Compiled from official statistics of the United Nations.

Table B-16.—Automobiles and trucks: U.S. exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Canada	42,534	678,138	1,457,442	3,549,940	3,638,143
Saudi Arabia	12,557	12,321	14,147	257,064	467,161
Venezuela	43,571	31,460	50,948	244,880	170,192
Kuwait	14,435	16,368	20,056	150,801	143,778
Iraq	3,693	1,739	51	3,501	118,197
Mexico	82,328	76,962	86,485	131,317	114,103
Peru	24,162	15,782	10,271	11,414	66,344
Japan	8,967	8,670	24,766	90,432	63,396
All other	318,284	361,517	277,388	971,420	994,179
Total	550,531	1,202,957	1,941,698	5,410,769	5,775,483

Source: Compiled from official statistics of the United Nations.

Table B-17.—Automobiles and trucks: EC exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Italy	265,232	169,982	767,205	1,747,401	4,252,863
United States	511,742	782,284	2,000,436	3,099,314	3,516,451
United Kingdom	47,622	91,186	592,440	1,821,125	3,330,805
France	208,584	280,402	806,342	1,828,075	3,181,359
Federal Republic of Germany	185,295	442,293	1,297,573	3,077,288	3,101,532
Belgium-Luxembourg	298,540	387,767	992,655	2,377,503	2,752,018
Netherlands	232,166	330,862	717,008	1,911,856	1,475,162
Switzerland	170,168	190,011	452,761	899,783	1,384,742
All other	1,553,136	1,783,898	3,184,372	8,980,026	11,624,425
Total	3,472,485	4,455,685	10,810,792	25,742,391	34,619,357

Source: Compiled from official statistics of the United Nations.

Table B-18.—Automobiles and trucks: French exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Italy	85,350	49,286	351,631	784,684	1,459,400
West Germany	83,347	124,526	488,320	915,482	791,426
United Kingdom	10,622	23,407	216,729	459,500	594,232
Nigeria	3,659	5,019	19,386	308,869	535,105
United States	36,438	32,594	41,761	108,680	370,190
Belgium-Luxemburg	85,920	82,898	210,882	414,814	354,826
Netherlands	12,273	31,937	144,702	492,761	284,375
Switzerland	30,079	34,401	95,001	166,725	216,894
All other	212,117	292,672	653,698	1,702,357	2,125,829
Total	559,805	676,740	2,186,110	5,353,872	6,732,277

Source: Compiled from official statistics of the United Nations.

Table B-19.—Automobiles and trucks: West German exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
United States	345,045	592,965	1,502,107	2,511,976	2,671,138
Belgium/Luxemburg	143,768	206,233	618,253	1,720,520	2,167,987
Italy	139,420	97,468	304,583	599,297	1,855,847
United Kingdom	16,179	33,677	219,881	818,132	1,784,169
France	99,984	125,761	355,837	811,008	1,591,541
Switzerland	86,511	88,208	224,246	472,271	766,022
Netherlands	86,856	96,453	194,837	665,491	594,860
Austria	76,540	86,674	232,683	757,593	589,903
All other	541,162	621,576	1,114,803	3,251,297	5,097,856
Total	1,535,465	1,949,015	4,767,290	11,607,585	17,119,323

Source: Compiled from official statistics of the United Nations.

Table B-20.—Coal: U.S. exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Japan	60,461	131,137	350,856	898,838	1,476,632
Canada	135,717	143,759	276,634	791,527	977,683
Italy	73,982	59,506	70,191	213,478	551,925
France	26,102	19,754	31,951	97,899	480,406
Netherlands	48,938	21,231	42,082	86,255	351,366
Spain	14,550	10,383	44,613	82,654	322,396
West Germany	51,002	44,434	41,773	43,456	229,805
Belgium	26,806	13,733	22,822	65,556	228,088
All other	44,497	57,325	138,191	450,687	1,387,572
Total	482,055	501,262	1,019,113	2,730,350	6,005,873

Source: Compiled from official statistics of the United Nations.

Table B-21.—Coal: West German exports, by principal markets specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
France	227,072	169,314	303,325	563,131	770,054
Belgium	138,035	114,461	253,242	415,459	628,563
Italy	34,106	44,313	64,367	156,694	215,459
Netherlands	92,732	73,931	67,530	88,829	210,372
Austria	32,129	27,080	22,098	61,242	84,437
Switzerland	32,402	14,719	13,363	23,990	36,028
United Kingdom	53	48	17,633	18,363	35,138
Hungary	123	0	22	55	24,187
All other	53,567	43,665	60,083	298,107	121,878
Total	610,219	487,531	801,663	1,625,870	2,126,116

Source: Compiled from official statistics of the United Nations.

Table B-22.—Heavy electrical equipment: EC exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
France	4,900	12,250	27,900	76,740	130,140
Federal Republic of Germany	6,300	10,100	35,160	73,770	114,750
Saudi Arabia	350	1,230	2,100	49,350	94,350
Italy	10,100	12,300	26,350	55,860	91,510
Netherlands	11,200	17,000	35,160	75,290	90,370
United Kingdom	2,800	6,100	16,940	44,800	80,690
Belgium-Luxembourg	8,400	11,400	28,200	55,500	76,950
Switzerland	4,900	7,100	16,800	39,000	68,130
All other	95,200	128,520	243,520	710,790	1,093,240
Total	144,150	206,000	432,130	1,181,100	1,840,130

Source: Estimated by staff of the U.S. International Trade Commission from official statistics of the United Nations.

Table B-23.—Heavy electrical equipment: French exports, by principal markets, specified years 1963-1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
West Germany	2,020	3,050	12,920	24,920	45,650
Italy	2,140	2,460	6,310	13,390	23,990
Belgium-Luxembourg	1,570	1,980	6,680	11,770	18,770
United Kingdom	460	1,130	3,380	10,110	18,490
United States	170	1,480	2,640	5,130	16,820
Brazil	560	120	3,050	8,740	14,230
Saudi Arabia	10	40	80	4,870	12,790
Spain	810	1,540	2,920	7,360	12,190
All other	13,760	19,840	43,000	148,260	221,970
Total	21,500	31,640	80,150	234,550	384,900

Source: Estimated by staff of the U.S. International Trade Commission from official statistics of the United Nations.

Table B-24.—Heavy electrical equipment: West German exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
France	2,700	8,320	14,680	43,700	72,430
Italy	6,830	8,300	16,130	34,250	51,880
Netherlands	6,340	9,670	19,370	43,220	51,720
Switzerland	3,560	4,990	11,290	27,560	45,690
Saudi Arabia	120	710	840	22,030	43,180
Austria	2,420	3,710	11,060	28,880	41,890
United Kingdom	1,220	3,100	7,520	22,100	39,600
Belgium-Luxembourg	3,960	5,640	13,730	25,480	32,830
All other	26,580	39,640	76,970	252,930	346,040
Total	53,730	84,080	171,590	500,150	752,260

Source: Estimated by staff of the U.S. International Trade Commission from official statistics of the United Nations.

Table B-25.—Machine tools: U.S. exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Mexico	7,685	13,231	17,802	42,018	261,331
Canada	22,960	48,311	43,198	61,081	255,230
United Kingdom	19,267	37,248	16,561	26,627	68,903
Japan	25,384	21,655	31,322	22,076	54,675
West Germany	14,175	8,188	10,368	23,708	35,387
France	11,359	14,300	12,213	10,799	30,293
Brazil	5,155	5,229	25,757	40,522	23,284
Australia	3,601	8,097	4,837	6,622	21,651
All other	85,191	79,968	97,944	218,617	292,961
Total	194,777	236,227	260,002	452,070	1,043,715

Source: Compiled from official statistics of the United Nations.

Table B-26.—Machine tools: EC exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
United States	19,988	15,348	69,785	192,871	493,950
France	65,563	88,336	194,839	205,245	390,658
Austria	13,941	12,847	41,439	61,382	259,320
West Germany	19,175	23,743	75,702	129,058	226,617
United Kingdom	35,022	69,729	66,492	138,135	202,311
Switzerland	39,957	28,618	63,536	73,975	167,655
Italy	85,150	60,611	104,055	121,051	151,576
Spain	31,526	37,130	72,573	71,093	148,946
All other	342,634	410,348	823,046	1,998,387	2,417,476
Total	652,956	846,710	1,511,467	2,991,197	4,404,509

Source: Compiled from official statistics of the United Nations.

Table B-27.—Machine tools: French exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
West Germany	4,761	3,615	18,352	27,292	39,825
United States	1,181	8,133	3,942	10,496	31,205
United Kingdom	3,603	4,647	5,105	13,483	19,867
Mexico	621	349	957	373	17,738
Italy	7,313	5,376	11,908	21,393	16,994
Switzerland	2,883	2,235	4,792	5,547	16,922
Portugal	540	301	1,676	1,121	13,031
Belgium-Luxembourg	3,516	2,638	6,134	11,584	12,668
All other	34,238	44,657	78,132	178,098	223,498
Total	58,756	71,951	130,998	269,387	391,748

Source: Compiled from official statistics of the United Nations.

Table B-28.—Machine tools: Italian exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
France	7,515	8,497	33,442	37,782	115,940
West Germany	3,137	8,743	27,613	53,267	95,869
United States	1,938	23,838	9,352	17,441	45,931
Mexico	448	2,285	1,888	4,366	33,574
United Kingdom	2,629	6,977	9,641	18,919	30,909
Switzerland	4,605	3,584	7,311	9,588	28,012
Spain	3,659	6,853	17,345	13,585	20,056
Turkey	344	558	1,972	9,004	17,280
All other	38,080	51,033	111,375	272,955	402,930
Total	62,355	112,368	219,939	436,907	790,501

Source: Compiled from official statistics of the United Nations.

Table B-29.—Machine tools: United Kingdom exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
United States	6,044	30,190	15,236	46,594	152,151
West Germany	4,831	5,183	13,892	22,740	42,285
France	9,200	8,235	18,971	16,515	30,085
Canada	5,393	13,103	6,433	10,480	26,871
Ireland	926	942	2,458	7,805	14,596
Italy	11,705	4,276	9,594	11,316	14,109
Switzerland	2,510	1,327	6,232	6,626	13,258
India	18,573	4,182	4,363	4,709	13,221
All other	67,171	58,428	131,506	195,925	260,283
Total	126,353	125,866	208,685	322,710	566,859

Source: Compiled from official statistics of the United Nations.

Table B-30.—Machine tools: West German exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Austria	11,445	11,144	32,734	51,378	232,852
France	41,957	61,363	124,678	135,138	210,742
United States	10,041	50,472	38,166	105,674	186,331
United Kingdom	27,009	53,461	44,835	89,757	130,633
Spain	16,051	18,472	34,071	37,699	113,943
Italy	62,755	47,921	78,445	81,951	109,219
Switzerland	28,429	20,486	43,161	50,065	103,843
Sweden	13,945	18,334	30,915	47,663	87,115
All other	156,784	205,649	437,616	1,172,579	1,226,982
Total	368,416	487,302	864,621	1,771,904	2,401,660

Source: Compiled from official statistics of the United Nations.

Table B-31.—Semiconductors: U.S. exports, by principal markets, specified years 1972 to 1981

Market	1972	1977	1981
	1,000 dollars		
Malaysia	1,185	244,548	725,734
Singapore	64,117	224,654	437,934
Philippines	116	63,249	387,222
Canada	25,639	38,303	240,436
Korea	172	142,187	228,332
Mexico	46,129	86,602	220,597
Thailand	105	15,439	184,971
West Germany	45,794	113,127	182,315
All other	290,293	578,950	999,438
Total	473,550	1,507,059	3,606,979

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table B-32.—Semiconductors: EC exports, by principal markets, specified years, 1972 to 1981

Market	1972	1977	1981
	1,000 dollars		
West Germany	113,412	301,088	419,506
France	75,756	171,968	301,227
Italy	58,064	194,135	281,815
United States	42,482	77,014	276,080
Netherlands	68,728	219,477	204,515
United Kindgom	53,341	79,650	199,069
Singapore	7,802	27,309	88,748
Sweden	25,531	50,869	76,251
All other	484,060	1,034,210	1,300,448
Total	929,176	2,155,720	3,147,659

Source: Compiled from official statistics of the United Nations.

Table B-33.—Semiconductors: French exports, by principal markets, specified years, 1972 to 1981

Market	1972	1977	1981
	1,000 dollars		
West Germany	54,609	114,723	202,569
Italy	11,767	37,277	105,979
United Kingdom	25,691	36,314	80,763
United States	8,413	19,088	64,930
Netherlands	28,126	85,997	59,113
Spain	1,785	21,117	20,729
Japan	6,173	12,657	18,428
Sweden	1,475	6,352	14,670
All other	35,698	93,562	135,846
Total	173,737	427,087	703,027

Source: Compiled from official statistics of the United Nations.

Table B-34.—Semiconductors: Italian exports, by principal markets, specified years, 1972 to 1981

Market	1972	1977	1981
	1,000 dollars		
West Germany	25,857	72,832	102,271
France	21,917	59,864	53,304
United States	2,444	7,942	45,259
Singapore	2,966	8,688	28,308
United Kindgom	5,163	8,849	23,705
Spain	1,243	7,634	11,239
Switzerland	817	1,424	5,565
Belguim-Luxemburg	3,614	2,716	4,716
All other	16,707	35,305	38,637
Total	80,728	205,254	313,004

Source: Compiled from official statistics of the United Nations.

Table B-35.—Semiconductors: West Germany exports, by principal markets, specified years, 1972 to 1981

Market	1972	1977	1981
	1,000 dollars		
France	44,672	68,545	164,129
Italy	39,139	131,802	145,344
United Kingdom	19,633	27,000	87,484
Netherlands	22,708	65,549	86,568
United States	6,414	18,395	71,978
Austria	13,942	76,687	60,474
Spain	2,998	21,480	31,262
Switzerland	10,363	19,753	31,009
All other	70,555	196,840	351,288
Total	230,424	626,051	1,029,536

Source: Compiled from official statistics of the United Nations.

Table B-36.—Steel Mill Products: U.S. exports, by principal markets, specified years 1963-81

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Canada	99,609	143,034	196,669	317,934	672,358
Mexico	15,363	24,651	36,534	104,128	648,192
Saudi Arabia	1,389	1,432	5,128	39,233	150,390
United Kingdom	7,123	18,492	22,635	39,484	85,330
Venezuela	21,267	10,547	25,634	78,771	78,813
Peru	4,459	7,450	6,077	12,698	46,743
Egypt	1,993	984	2,231	16,925	38,666
Japan	8,081	4,794	7,205	15,844	38,521
All other	317,858	265,592	376,356	625,837	852,745
Total	477,142	476,976	678,469	1,250,854	2,611,758

Source: Compiled from official statistics of the United Nations.

Table B-37.—Steel Mill Products: EC exports by principal markets, specified years 1963-81

Market	1963	1967	1972	1977	1981
	1,000 dollars				
United States	264,115	549,325	1,090,193	1,946,437	3,488,183
West Germany	426,323	551,853	1,429,289	2,279,831	3,029,745
France	424,299	628,382	1,321,742	2,308,998	2,979,651
Netherlands	240,862	370,208	727,543	1,242,129	1,514,272
Italy	321,126	272,808	474,578	1,084,454	1,443,380
United Kingdom	63,317	104,343	221,995	893,066	1,325,722
Belgium-Luxembourg	100,777	207,123	393,584	839,676	1,217,162
Switzerland	174,185	160,757	332,460	492,045	769,055
All other	1,547,722	2,076,986	3,297,249	8,486,466	13,242,985
Total	3,562,726	4,921,785	9,288,633	19,573,102	29,010,155

Source: Compiled from official statistics of the United Nations.

Table B-38.—Steel Mill Products: French exports, by principle markets, specified years 1963-81

Market	1963	1967	1972	1977	1981
	1,000 dollars				
West Germany	173,710	186,131	364,505	573,712	814,416
United States	38,653	85,628	208,735	435,916	669,721
Italy	97,324	81,575	152,269	523,943	635,676
Belgium-Luxembourg	26,775	58,889	117,516	239,637	367,419
United Kingdom	11,205	20,148	31,678	130,717	207,753
Spain	16,349	24,746	43,946	123,728	186,674
Netherlands	14,993	39,138	67,508	117,416	181,837
Mexico	932	3,294	4,529	22,950	179,438
All other	317,882	382,149	631,690	1,630,071	2,466,609
Total	697,823	881,698	1,622,376	3,798,090	5,709,543

Source: Compiled from official statistics of the United Nations.

Table B-39.—Steel Mill Products: United Kingdom exports, by principle markets, specified years 1963-81

Market	1963	1967	1972	1977	1981
	1,000 dollars				
United States	50,914	91,694	176,766	250,625	366,302
West Germany	17,574	10,124	23,242	94,936	194,703
Ireland	13,393	14,642	34,722	84,743	128,256
Canada	23,959	28,286	38,329	51,025	115,443
France	12,799	10,520	22,103	82,432	108,259
India	26,120	22,794	64,203	38,253	93,103
Netherlands	16,328	12,455	21,316	56,250	82,013
Sweden	25,600	34,210	41,563	54,871	69,770
All other	359,190	370,768	469,323	904,349	1,108,721
Total	545,877	595,493	891,567	1,617,484	2,266,570

Source: Compiled from official statistics of the United Nations.

Table B-40.—Steel Mill Products: West German exports, by principle markets, specified years 1963-81

Market	1963	1967	1972	1977	1981
	1,000 dollars				
United States	58,749	191,675	318,786	579,680	1,209,344
France	237,372	285,720	493,726	830,356	1,010,060
Netherlands	120,445	189,631	364,403	657,206	776,888
United Kingdom	6,962	21,117	59,060	337,347	532,178
Belgium-Luxembourg	40,195	87,687	151,454	343,466	447,962
Italy	124,811	113,909	155,938	240,982	403,482
Switzerland	83,962	69,659	131,481	210,435	370,303
Denmark	35,828	47,366	83,704	151,168	284,668
All other	366,810	652,304	1,101,732	3,141,400	4,731,870
Total	1,075,134	1,659,068	2,860,284	6,492,040	9,766,755

Source: Compiled from official statistics of the United Nations.

Table B-41.—Telecommunications apparatus: U.S. exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Canada	47,465	92,428	183,631	293,627	423,118
Mexico	5,375	13,272	79,065	166,915	362,237
West Germany	14,476	33,736	66,405	101,811	253,512
United Kingdom	12,394	30,737	49,445	102,637	227,761
Japan	5,524	21,431	45,157	71,358	159,553
Republic of Korea	938	6,127	7,545	67,925	136,158
Saudi Arabia	1,423	5,681	2,892	138,703	129,377
Venezuela	8,663	12,457	12,255	39,902	125,791
All other	376,309	258,957	389,629	1,140,636	1,668,023
Total	472,567	474,826	836,024	2,123,514	3,485,530

Source: Compiled from official statistics of the United Nations.

Table B-42.—Telecommunications apparatus: Exports of EC member states to each other, specified years 1963 to 1981

(In thousands of dollars)

Country	1963	1967	1972	1977	1981
France	39,402	50,617	135,310	477,971	723,964
West Germany	52,537	63,407	223,392	384,280	657,758
Italy	25,414	29,460	80,319	360,378	576,530
Netherlands	104,202	119,867	272,141	649,678	575,287
United Kingdom	10,386	17,713	89,038	139,301	408,659
Belgium-Luxembourg	25,699	29,876	129,403	263,625	355,781
Greece	12,719	15,926	74,444	56,084	167,636
Ireland	7,291	5,961	18,586	41,200	100,980
Denmark	11,214	15,766	35,947	80,692	97,256
Total	288,864	348,593	1,058,580	2,453,209	3,663,824

Source: Compiled from the official statistics of the United Nations.

Table B-43.—Textile: U.S. exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Canada	83,337	99,136	197,362	445,157	582,983
United Kingdom	15,965	24,095	43,498	89,247	245,333
Mexico	6,365	7,201	15,073	35,104	157,282
Japan	16,974	23,221	16,370	66,642	147,359
Saudi Arabia	423	835	1,752	27,914	139,625
Belgium-Luxembourg	13,266	11,889	14,768	87,785	117,071
Japan	4,828	6,634	20,748	48,778	113,386
Hong Kong	6,607	6,229	7,949	16,329	90,499
All other	225,674	245,137	269,399	715,002	1,688,017
Total	373,439	424,377	586,919	1,531,958	3,281,555

Source: Compiled from official statistics of the United Nations.

Table B-44.—Textile: EC exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
West Germany	513,110	606,278	1,484,623	2,469,112	2,845,986
France	129,728	252,049	734,875	1,596,244	2,247,174
United Kingdom	118,144	140,564	289,579	861,133	1,625,810
Netherlands	304,078	381,871	739,701	1,241,999	1,330,243
Belgium-Luxembourg	173,078	239,833	553,349	1,057,308	1,265,378
Italy	97,769	143,178	324,641	670,997	1,026,948
United States	172,427	177,481	476,542	435,441	658,762
Switzerland	106,709	122,978	224,770	439,254	623,157
All other	1,262,018	1,587,680	2,659,666	5,261,306	7,148,772
Total	2,877,839	3,651,912	7,487,746	14,032,794	18,772,230

Source: Compiled from official statistics of the United Nations.

Table B-45.—Textile: French exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
West Germany	134,617	130,047	316,229	467,693	515,092
Belgium-Luxembourg	47,780	59,579	151,618	282,167	318,539
Italy	33,027	42,870	92,396	215,497	307,226
United Kingdom	19,659	16,299	25,979	100,914	196,758
Netherlands	31,335	36,501	61,905	89,122	106,404
Switzerland	22,427	21,389	33,789	56,651	87,734
United States	21,584	27,280	60,604	61,623	80,446
Austria	14,743	10,501	11,175	25,985	53,632
All other	204,460	255,532	323,216	619,937	801,801
Total	534,632	599,998	1,076,911	1,919,589	2,467,632

Source: Compiled from official statistics of the United Nations.

Table B-46.—Textile: Italian exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
West Germany	114,738	136,133	361,976	571,819	821,238
France	44,083	54,742	147,059	324,271	530,075
United Kingdom	34,901	34,934	44,233	174,251	332,444
United States	43,173	41,800	79,198	112,774	236,100
Belgium-Luxembourg	18,437	21,480	60,856	112,563	168,183
Austria	11,596	13,076	20,204	59,563	113,177
Japan	2,520	5,148	17,773	54,923	108,189
Switzerland	20,443	19,145	27,627	69,201	107,807
All other	210,364	264,311	419,960	753,502	1,399,392
Total	500,255	509,769	1,178,886	2,232,878	3,756,605

Source: Compiled from official statistics of the United Nations.

Table B-47.—Textile: United Kingdom exports, by principal markets, specified years 1963 to 1981

Market	1963	1967	1972	1977	1981
	1,000 dollars				
Ireland	32,730	36,991	72,696	154,486	200,760
West Germany	46,713	35,196	63,608	175,601	197,827
France	14,069	14,890	30,361	105,043	174,840
United States	55,880	46,553	93,218	94,496	126,709
Netherlands	16,573	14,435	30,054	85,838	121,262
Belgium-Luxembourg	8,533	9,076	21,743	74,460	103,832
Italy	20,605	13,562	22,289	58,988	102,083
Japan	17,169	21,019	30,005	56,242	77,011
All other	409,955	435,204	680,118	1,053,882	1,056,534
Total	622,227	626,926	1,044,362	1,859,036	2,160,858

Source: Compiled from official statistics of the United Nations.

Table B-48.—Aircraft and aerospace: U.S. and EC exports to world markets, specified years 1963 to 1981

(In thousands of dollars)

Year	U.S. exports	EC exports
1963	1,084,216	627,292
1967	1,518,480	730,758
1972	2,919,408	1,255,159
1977	5,865,777	3,435,738
1981	14,612,000	10,039,977

Source: Compiled from official statistics of the U.S. Department of Commerce, and United Nations data.

Note: Quantity data are not available.

Table B-49.—Apparel: U.S. and EC exports to world markets, specified years 1963 to 1981

(In thousands of dollars)

Year	U.S. exports	EC exports
1963	89,833	954,435
1967	126,285	1,488,282
1972	209,980	3,908,222
1977	560,159	8,475,408
1981	1,128,983	10,967,567

Source: Compiled from official statistics of the U.S. Department of Commerce and the United Nations.

Note: Quantity data are not available.

Table B-50.—Automatic data processing machines: U.S. and EC exports to world markets, specified years 1963 to 1981

(In thousands of dollars)

Year	U.S. exports	EC exports
1963	225,462	303,126
1967	420,712	677,872
1972	575,236	1,517,826
1977	1,057,575	2,912,434
1981	5,081,078	5,444,836

Source: Compiled from official statistics of the United Nations.

Note: Quantity data are not available.

Table B-51.—Automobiles and trucks: U.S. and EC exports to world markets, specified years 1963 to 1981

Year	U.S. exports		EC exports	
	Quantity	Value	Quantity	Value
	1,000 units	1,000 dollars	1,000 units	1,000 dollars
1963	269	525,234	3,464	3,473,485
1967	368	969,096	3,912	4,455,685
1972	535	1,735,942	6,370	10,810,792
1977	906	4,849,680	6,861	25,742,391
1981	679	3,996,144	5,877	34,619,357

Source: Compiled from official statistics of the U.S. Department of Commerce, 1963-81, and United Nations data, 1963-81.

Table B-52.—Coal: U.S. and EC exports to world markets, specified years 1963 to 1981

(In thousands of dollars)

Year	U.S. exports	EC exports
1963	482,055	935,448
1967	501,262	682,708
1972	1,019,113	1,053,952
1977	2,730,350	2,078,086
1981	6,005,813	2,768,441

Source: Compiled from official statistics of the United Nations, 1963-81.

Note: Quantity data are not available.

Table B-53.—Heavy electrical equipment: U.S. and EC exports to world markets, specified years 1963 to 1981

(In thousands of dollars)

Year	U.S. exports	EC exports
1963	49,660	144,150
1967	86,720	206,000
1972	133,780	432,130
1977	418,600	1,181,100
1981	554,500	1,840,130

Source: Estimated by the staff of the International Trade Commission from official statistics of the United Nations, 1963-81.

Note: Quantity data are not available.

Table B-54.—Machine tools: U.S. and EC exports to world markets, specified years 1963 to 1981

(In thousands of dollars)

Year	U.S. exports	EC exports
1963	194,777	652,956
1967	236,227	846,710
1972	260,002	1,511,467
1977	452,070	2,991,197
1981	1,043,715	4,404,509

Source: Compiled from official statistics of the United Nations.

Note: Quantity data are not available.

Table B-55.—Semiconductors: U.S. and EC exports to world markets, specified years, 1972, 1977, and 1981

(In thousands of dollars)

Year	U.S. exports	EC exports
1972	473,550	929,176
1977	1,507,059	2,155,720
1981	3,606,979	3,147,659

Source: Compiled from official statistics of the United Nations.

Note.—Quantity data are not available.

Table B-56.—Steel Mill Products: U.S. and EC exports to world markets, specified year 1963 to 1981

Year	U.S. exports		EC exports	
	1,000 short tons	1,000 dollars	1,000 short tons	1,000 dollars
1963	2,151.5	447,142	28,915.5	3,562,726
1967	1,706.8	476,976	40,340.8	4,921,785
1972	2,955.3	678,469	54,992.6	9,288,633
1977	2,101.0	1,250,854	59,159.3	19,573,102
1981	2,956.4	2,611,758	67,833.3	29,010,155

Source: United Nations data, and IISI Steel Statistical Yearbook, 1982.

Table B-57.—Telecommunications: U.S. and EC exports to world markets, specified years 1963 to 1981

(In thousands of dollars)

Year	U.S. exports	Net EC exports
1963	528,928	599,168
1967	472,188	774,147
1972	698,541	1,513,762
1977	2,123,512	4,480,355
1981	3,500.430	5,219,573

Source: Compiled from official statistics of the United Nations.

Note: Quantity data are not available.

Table B-58.—Textiles: U.S. and EC exports to world markets, specified years 1963 to 1981

(In thousands of dollars)

Year	U.S. exports	EC exports
1963	373,439	2,877,839
1967	424,377	3,651,912
1972	586,919	7,487,746
1977	1,531,958	14,032,794
1981	3,281,555	18,772,230

Source: Compiled from official statistics of the U.S. Department of Commerce and the United Nations.

Note: Quantity data are not available.