DOCUMENT RESUME

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U.S. Statistics on International Technology Transfer: Need for Additional Measures. ID-78-24; B-191298. March 27, 1978. Released March 30, 1978. 4 pp. + 4 appendices (9 pp.).

Report to Rep. Clement J. Zablocki, Chairman, House Committee on International Relations: International Security and Scientific Affairs Subcommittee; by Elmer B. Staats, Comptroller General.

Issue Area: International Economic and Military Programs: U.S. Comparative Advantage in Trade and Technology (508).
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The United States measures technolcgy transfers through annual statistics on payments and receipts from royalty and licensing fees. Because payments arising frcm a single licensing agreement typically continue for a number of years, the payments and receipts in any one year reflect not only agreements initiated in that year but compensation paid on technology transferred in earlier years. Payments currently received are based cn early years in which the United States had a large technology lead, and their magnitude may obscure current trends. Findings/Conclusions: Statistics of technology transfer on a year-of-origin basis are an essential tool for policy analysis of such factors as employment consequences and international competitive position. Statistics by year of origin would also help in undertanding to what extent U.S. firms are taking advantage of technology developed by others. The Department of Commerce objected to previous GAO proposals that it collect data on licensing and royalty fees in a manner which identifies yearly transfers, stating that it involved too much paperwork. The additional paperwork appears to be minor and should be weighed against benefits. Even if year-of-origin data were attained, knowledge of technology transfer would be limited because of the inadequacy of money payments as a measure. Japan not only represents technology payments in cumulative and year-of-origin forms but has published quarterly and annual listings of all transfer agreements. The U.S. treatment of such agreements as "business confidential" information may be open to question. Recommendations: The Secretary of Commerce should compile statistics of international transfer of technology on a year-of-origin basis in addition to the current cumulative form. (HTW)

REPORT BY THE

# Comptroller General

OF THE UNITED STATES

# U.S. Statistics On International Technology Transfer--Need For Additional Measures

Present U.S. statistics show cumulative payments and receipts, but statistics showing year-of-origin payments and receipts, additional to the cumulative, are necessary for policy analysis.

This report was requested by the Chairman of the Subcommittee on International Security and Scientific Affairs of the Committee on International Relations, House of Representatives.

ID-78-24

MARCH 27, 1978

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-191298

The Honorable Clement J. Zablocki
Chairman, Subcommittee on International
Security and Scientific Affairs
Committee on International Relations
House of Representatives

Dear Mr. Chairman:

This is in reply to your letter of December 29, 1977, requesting a report on work the General Accounting Office has done which describes the way the United States, Japan, and Germany measure international technology transfers.

Currently, the United States measures technology transfers through annual statistics on payments and receipts from royalty and licensing fees. Because payments arising from a single licensing agreement typically continue for a number of years (on average, 10 years) the payments and receipts for royalty and licensing fees in any one year reflect not only agreements newly initiated in that year but also compensation paid on technology transferred in earlier years. In effect, the annual figures become 10-year moving totals. Inasmuch as the United States in earlier years had a tremendous technology lead over other nations, payments it currently receives from earlier transfer are exceptionally large. They are so large, in fact, as to lead one to believe they may obscure current trends.

Indicative of the scale of the difference that can arise between cumulative statistics and year-of-origin statistics is the record in Japan. On the basis of cumulative statistics, Japan is nearly the opposite of the United States. In 1971, Japan was an 8-fold net importer of technology, whereas the United States was a 10-fold net exporter. However, in 1972 Japan began compiling its technology transfer statistics on a year-of-origin basis as well as the cumulative basis. The year-of-origin statistics showed that Japan became a net exporter in 1973.

Statistics of technology transfer on a year-of-origin basis are an essential tool for policy analysis. With the Congress considering additional controls over the export of

technology, we believe policy considerations make it essential to know whether actual inflow and outflow presently approximate the cumulative statistics or whether the statistics on a current basis are sharply in contrast. If current inflow approximates outflow, one might broadly presume that the employment consequences of outflow might be approximately balanced by the employment gains from inflows and, further, that the disadvantages and advantages in international competitiveness might be roughly balanced.

Statistics of technology transfer by year of origin would also help policymakers understand the extent to which U.S. firms are taking advantage of the technology developed by others. When a nation such as the United States has been far ahead for many years, it is easy to develop a "not invented here" syndrome and cease to be as alert to what others are doing as they are of U.S. developments. Such an attitude becomes increasingly troublesome in view of strong indicators of sharply rising foreign technological breakthroughs. The increasing number of U.S. patents awarded to Japan constitutes the major element in the rising proportion of U.S. patents awarded to foreigners. (See app. I.)

In 1976 and again in 1977 GAO proposed that the Department of Commerce collect data on licensing and royalty fees in a manner which identifies yearly transfers while continuing, of course, to present the cumulative information. (See app. II.) The Department in both instances informally advised us that it objected on the basis that additional paperwork would be required. Nevertheless, we continue to believe that the additional paperwork should be measured against the benefits. We recommend that the Secretary of Commerce compile statistics of international transfer of technology on a year-of-origin basis in addition to the cumulative form in which such statistics are currently published.

It would appear to us that the additional paperwork would be minor considering that the Department gets its data for cumulative statistics from corporations and individuals with investments in foreign affiliates or receipts and payments from foreign sources above a given dollar amount. Data on current transfers would be obtained from the same corporations, which would seem to involve only an additional entry on forms currently in use.

The Department goes to great length to distinguish transfers of technology between affiliated and unaffiliated corporations. However, for economic analysis, it is far more important in our judgmen to disti guish between year-of-origin changes and what is, in effect, a 10-year "moving total."

It must be pointed out that, even if year-of-origin data were to be attained, our knowledge as to what is happening in technology transfer would still be limited. This is because money payments, although the best overall measure, are not an adequate measure. Pricing of technology is difficult for a number of reasons. Normally, technology is produced for a firm's own use rather than for sale. Since the sale is something of a by-product, how to charge for it is a question. (It is now thought that much of U.S. licensing to Japan in the 1950s and early 1960s was underpriced.) Further, technology is likely to be a unique product, and unique products are more difficult to price than substitutable ones.

Additionally, payments do not fully reflect technology transferred because when transfers occur between affiliated corporations there is opportunity to adjust prices to enhance after-tax returns of whichever is to be the favored corporation, usually the parent company. Cross-licensing arrangements, which typically do not involve licensing fees, are not included in such figures. However, when the concern is balance between outflow and inflow, crosslicensing is not a difficulty, for ordinarily it is entered into only when two firms believe they have comparable amounts to gain from sharing with one another.

Japan not only represents technology payments in cumulative and year-of-origin forms, but also until recently has published, on a quarterly and annual basis, listings of all transfer agreements giving the name of the licensor, licensee, and country and brief description of the technology transferred. The United States treats specific technology agreements as "business confidential" information, under no circumstances to be revealed to the public. If American corporations have been able to live with supplying such information to the Japanese Government for publication, one cannot help wondering if the consequences of revealing such information to the American Government for publication would be as dire as typically believed.

The Japanese Government summarizes such individual corporate data annually, showing the number of agreements entered into by country and by product lines. (See app. III for information for 1950-67.) As is apparent, the unit of information for such material is the individual contracts. The United States presents its data more broadly, especially with respect to payments. Receipts are shown by dollar value for "petroleum," "trade," and three broad classes of manufacturing. Payments are shown by dollar value for only two categories, "manufacturing" and "other." (For the U.S. style of presentation of these statistics, see app. IV.)

Awareness of individual agreements and aggregations of them by product lines enhances understanding of transfer movements. To know what is really happening in this field, however, requires persons with such intimate knowledge of the particular industry as to be able to assess the significance of individual agreements. Such contracts cover items not only of immediate importance but also ongoing importance, such as, for example, the transistor. Others cover technology that has only temporary significance. Assessment of technology transferred can be done only by highly trained industrial engineers, economists, and marketing experts. It is necessarily judgmental, and to date such assessments have been attempted only occasionally and for particular products. They have not been prepared on a regular, ongoing basis.

You also requested any information we might have already developed on German statistical measures of technology transfer. Unfortunately, we have not developed any such information in our work and can, therefore, not be responsive in this area.

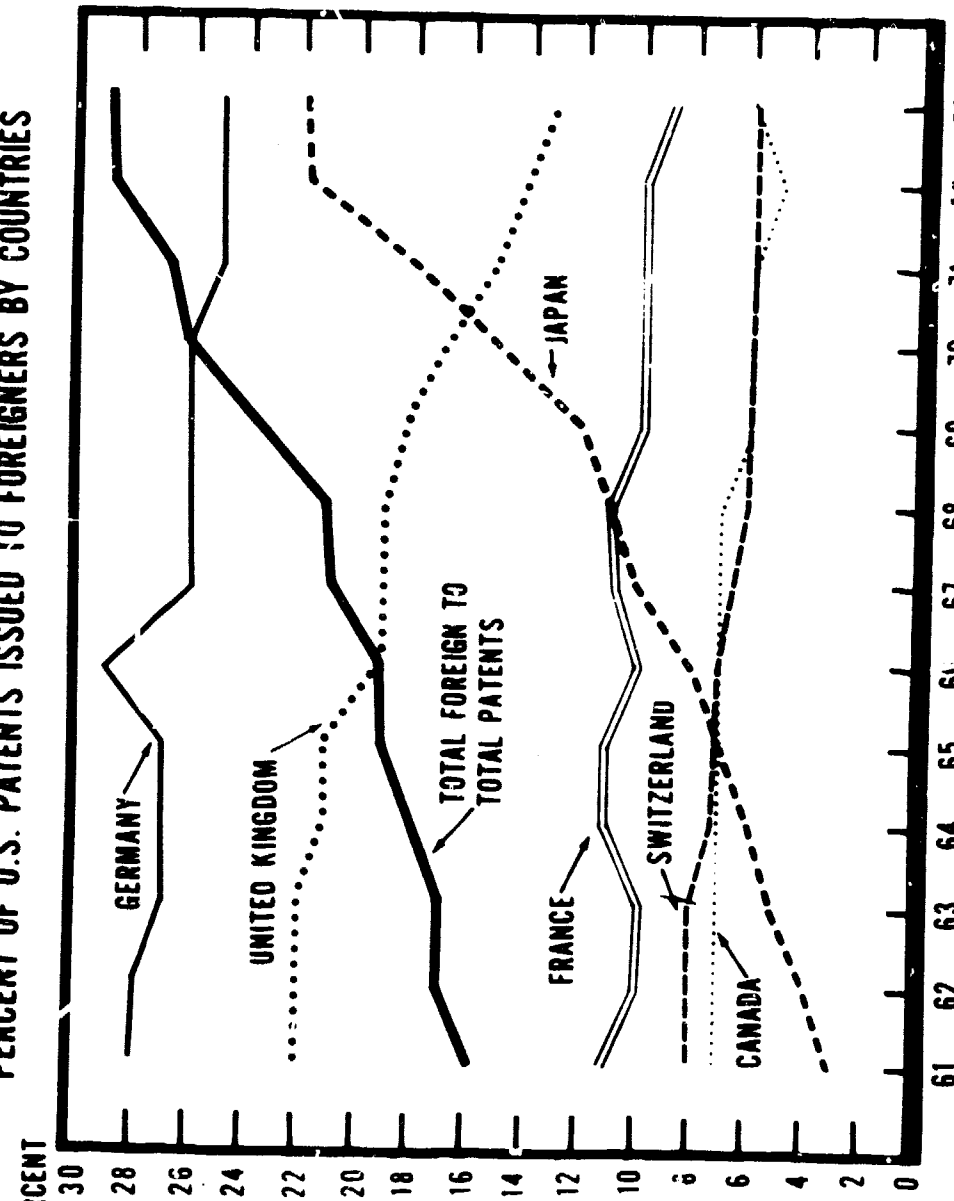
As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 3 days from the date of the report. At that time we will send copies to interested parties and make copies available to others upon request.

Sincerely yours,

Comptroller General
of the United States

APPENDIX I

PERCENT OF TOTAL U.S. PATENTS ISSUED TO FOREIGNERS,
PERCENT OF U.S. PATENTS ISSUED TO FOREIGNERS BY COUNTRIES




SOURCE: ANNUAL REPORT OF COMMISSIONER OF PATENTS 1971&1974

APPENDIX II

"COPY"

UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

INTERNATIONAL DIVISION

JUL 16 1976

The Honorable
The Secretary of Commerce

Attention: Dr. John W. Kendrick
Chief Economist

Dear Mr. Secretary:

I am writing you with respect to the way the U.S. Government compiles its statistics on technology transfer. Currently, such statistics appear only in balance-of-payment form which means that we do not distinguish between payments for technology currently transferred and technology transferred in earlier years but on which payments are continuing to be made. The cumulative figures appear to make the United States a major net exporter. Statistics for recent years show payment for export of technology some 10 times payment for import of technology.

We believe for public policy purposes, both in the Congress as well as in the Executive Branch, there would be advantage in knowing the current U.S. situation as well as the cumulative. Possible policy formulations could be quite different depending upon whether the United States is currently a net exporter or net importer of technology.

Although no one has yet developed a precise measure of the impact of technological developments on the economy, we know enough to be confident that technology makes a major contribution to economic performance. Certainly observers are unanimous in the case of postwar Japan that technological advances--in major part through transfer--represent a basic factor in Japan's brilliant postwar economic performance.

Beginning in 1972, Japan has published its statistics of technology transfer on a current basis as well as cumulatively and the results are strikingly different. On the usual balance-of-payment basis, Japan is an 8-fold net importer. On a current basis, Japan in 1973 became a net exporter. Receipts were 1.26 payments.

APPENDIX II

We hope you share these views on the importance of knowing current as well as cumulative trends, and that U.S. statistics on technology transfer which the Bureau of Economic Analysis compiles can be expanded to show such information. We would be pleased to discuss the matter with you or your staff if you should so desire. Should you have any questions, please contact Eleanor M. Hadley, Assistant Director, on 275-5889.

Sincerely yours,

Charles D. Hylander

J. K. Fasick
for Director

APPENDIX II

"COPY"

UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

INTERNATIONAL DIVISION

JUN 27 1977

The Honorable
The Secretary of Commerce

Attention: Dr. Courtenay M. Slater
Chief Economist

Dear Madame Secretary:

I am writing you with respect to the way the U.S. Government compiles its statistics on technology transfer. Currently, such statistics appear only in balance-of-payment form which means that we do not distinguish between payments for technology currently transferred and technology transferred in earlier years but on which payments are continuing to be made. The cumulative figures appear to make the United States a major net exporter. Statistics for recent years show payment for export of technology some 10 times payment for import of technology.

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APPENDIX II

We hope you share these views on the importance of knowing current as well as cumulative trends, and that U.S. statistics on technology transfer which the Bureau of Economic Analysis compiles can be expanded to show such information.

We submitted this proposal to your predecessor without success. However, as growing interest on the Hill and current items in the news indicates, it becomes of increasing importance that we know what the facts are. The paperwork argument does not seem convincing. What we are suggesting could be accomplished by one extra space on the forms firms are currently obliged to submit.

We would be pleased to discuss the matter with you or your staff if you should so desire. Should you have any questions, please contact Eleanor Hadley, Assistant Director, on 377-5550.

Sincerely yours,

J. K. Fasick

J. K. Fasick
Director

## JAPAN'S TECHNOLOGICAL-IMPORT CONTRACTS, BY PRODUCT LINES, 1950-67

(Number)

| Product line | 1950-54 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Electrical machinery | 105 | 17 | 20 | 29 | 26 | 39 | 99 | 59 | 82 | 122 | 81 | 80 | 64 | 101 | 924 |
| Transmission and industrial machinery | 10 | 1 | 5 | 1 | 1 | 3 | 7 | 8 | 2 | - | - | - | 2 | 2 | 42 |
| Electrical wire and cable | 11 | 1 | 1 | 1 | 7 | 4 | 2 | 1 | - | 2 | 4 | 2 | 4 | 3 | 43 |
| Communication equipment | 69 | 7 | 6 | 26 | 13 | 10 | 60 | 25 | 50 | 41 | 36 | 42 | 17 | 31 | 433 |
| Other electrical equipment | 15 | 8 | 8 | 1 | 5 | 22 | 30 | 25 | 30 | 79 | 41 | 36 | 41 | 65 | 406 |
| Transportation machinery | 28 | 8 | 12 | 2 | 6 | 6 | 17 | 24 | 17 | 4 | 5 | 10 | 19 | 10 | 168 |
| Other machinery | 113 | 16 | 20 | 25 | 23 | 31 | 71 | 101 | 95 | 272 | 202 | 190 | 207 | 226 | 1,592 |
| Prime mover machinery | 28 | 2 | 4 | 3 | 2 | 2 | 3 | 5 | 4 | 5 | 10 | 3 | 8 | 2 | 81 |
| Metalworking machinery | 4 | 2 | - | 2 | 2 | 2 | 4 | 5 | 3 | 22 | 9 | 6 | 20 | 14 | 95 |
| Textile machinery | 6 | 2 | 1 | 4 | - | 1 | 3 | 2 | 4 | - | 10 | 15 | 9 | 12 | 69 |
| Other | 75 | 10 | 15 | 16 | 19 | 26 | 61 | 89 | 84 | 245 | 173 | 166 | 170 | 198 | 1,345 |
| Metal and metalworking fabrication | 38 | 7 | 18 | 11 | 12 | 25 | 19 | 27 | 22 | 16 | 40 | 34 | 70 | 39 | 378 |
| Chemicals | 83 | 17 | 46 | 30 | 11 | 33 | 77 | 59 | 82 | 83 | 95 | 81 | 126 | 147 | 980 |
| Chemical fibers | 7 | - | 6 | 2 | - | 3 | 2 | - | 14 | 2 | 3 | 1 | 3 | 4 | [illegible] |
| Pharmaceutical and agricultural chemicals | 34 | 4 | 5 | 8 | 2 | 6 | 14 | 10 | 7 | 4 | 9 | 17 | 18 | 5 | 143 |
| Organic and inorganic | 32 | 9 | 33 | 18 | 7 | 21 | 51 | 40 | 56 | 77 | 32 | 41 | 35 | 54 | 506 |
| Other | 10 | 4 | 2 | 2 | 2 | 3 | 10 | 9 | 5 | 10 | 51 | 22 | 70 | 84 | 284 |
| Textiles | 24 | 1 | 12 | 7 | 3 | 7 | 8 | 23 | 3 | 16 | 17 | 15 | 14 | 26 | 176 |
| Petroleum products | 15 | 3 | 5 | 2 | 5 | 4 | 7 | 5 | 5 | 16 | 9 | 2 | 10 | 15 | 103 |
| Rubber and leather materials | 12 | 1 | 5 | 7 | 2 | 3 | 12 | 8 | 2 | 1 | 4 | 5 | 6 | 8 | 76 |
| Construction | 7 | 1 | 2 | 3 | - | 1 | - | 1 | 1 | 9 | 7 | 13 | 12 | 9 | 66 |
| Glass, stone, and clay products | 10 | - | 2 | - | 1 | 3 | 7 | 7 | 12 | 4 | 10 | 7 | 20 | 10 | 93 |
| Paper and pulp | 6 | 1 | 1 | 1 | 1 | - | 4 | 5 | 6 | 7 | 8 | 4 | 6 | 4 | 52 |
| Electricity and gas | 3 | - | - | - | - | - | - | - | - | | | | | | |
| Entertainment | 1 | - | - | - | - | 1 | - | - | - | | | | | | |
| Printing and publication | 1 | - | 1 | - | - | 1 | 1 | 1 | - | 4 | - | - | - | - | |
| Food products | - | - | - | 1 | - | - | 4 | | 1 | - | | | | | 165 |
| Other | - | - | - | - | - | - | - | - | - | - | 24 | 31 | 47 | 43 | |
| Total | 446 | 72 | 144 | 118 | 90 | 153 | 327 | 230 | 328 | 564 | 500 | 472 | 601 | 638 | 4,773 |

Source: Taken from "Gaishi Donyu Nenkan," 1968-69 ("Yearbook on Foreign Capital Entry"), p. 3; and reproduced in "Competitiveness of Japan In the U.S. Market" (Investigation No. 332-65), Aug. 1973, U.S. Tariff Commission.



APPENDIX III

## JAPAN'S TECHNOLOGICAL-IMPORT CONTPACTS, BY SOURCES, 1950-67

| Source | 1950-54 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| United States | 313 | 44 | 85 | 61 | 63 | 92 | 200 | 187 | 203 | 355 | 274 | 265 | 330 | 388 | 2,859 |
| West Germany | 23 | 9 | 11 | 7 | 6 | 16 | 45 | 40 | 46 | 64 | 60 | 55 | 66 | 59 | 517 |
| Switzerland | 46 | 2 | 6 | 10 | 8 | 9 | 18 | 22 | 25 | 29 | 61 | 31 | 37 | 27 | 341 |
| United Kingdom | 8 | 3 | 11 | 3 | 2 | 7 | 10 | 16 | 12 | 36 | 47 | 39 | 43 | 57 | 294 |
| France | 12 | 4 | 6 | 4 | 1 | 7 | 5 | 10 | 8 | 25 | 15 | 21 | 33 | 29 | 180 |
| Italy | 10 | - | 10 | 3 | 1 | 1 | 8 | 1 | 5 | 6 | 4 | 8 | 4 | 11 | 72 |
| Canada | 13 | 2 | 3 | 2 | 2 | 2 | 2 | 7 | 2 | 4 | 6 | 8 | 39 | 10 | 102 |
| Netherlands | 1 | 1 | 2 | 18 | - | 9 | 7 | 7 | 13 | 15 | 9 | 22 | 16 | 8 | 129 |
| Sweden | 12 | 1 | 1 | 2 | 2 | 3 | 8 | 8 | 6 | 6 | 5 | 3 | 5 | 2 | 64 |
| Panama | 4 | 4 | 4 | 2 | 1 | 1 | 7 | 8 | 3 | 6 | 1 | 2 | 4 | 11 | 58 |
| Denmark | 3 | - | - | - | 2 | 1 | - | 2 | - | 1 | 2 | 4 | 7 | 2 | 24 |
| Norway | - | - | 1 | 3 | - | 1 | 1 | 3 | - | 1 | - | 1 | - | 1 | 12 |
| Venezuela | - | - | - | 3 | 1 | 1 | 5 | 5 | - | 5 | 1 | - | - | 2 | 23 |
| Austria | - | 1 | 2 | - | - | - | 2 | - | - | 2 | - | 2 | 7 | 2 | 18 |
| Lichtenstein | - | 1 | 1 | - | 1 | 1 | 3 | 1 | - | 2 | 4 | 3 | 2 | 2 | 21 |
| Australia | - | - | 1 | - | - | 1 | 2 | - | - | 1 | 1 | - | 3 | - | 9 |
| Morocco | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Belgium | - | - | - | - | - | 1 | 2 | 2 | 3 | 4 | 1 | 4 | 2 | 3 | 22 |
| Bahamas | - | - | - | - | - | - | 2 | - | - | - | 2 | 1 | 3 | - | 8 |
| U.S.S.R. | - | - | - | - | - | - | - | 1 | - | - | 2 | 2 | - | 2 | 7 |
| Luxembourg | - | - | - | - | - | - | - | - | 2 | - | 2 | - | 1 | - | 5 |
| Greece | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 |
| Finland | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 |
| Czechoslovakia | - | - | - | - | - | - | - | - | - | - | 2 | 1 | - | 2 | 5 |
| Bulgaria | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 |
| Total | 446 | 72 | 144 | 118 | 90 | 153 | 327 | 320 | 328 | 564 | 500 | 472 | 601 | 638 | 4,773 |

Source: Taken from "Gaishi Donyu Nenkan," 1968-69 ("Yearbook on Foreign Capital Entry"),p. 3; and reproduced in "Competitiveness of Japan In the U.S. Market" Investigation No. 332-65), Aug. 1973, U.S. Tariff Commission.



APPENDIX III

DIRECT INVESTMENT RECEIPTS OF FEES AND ROYALTIES, 1975-76 1/
(Millions of dollars)

| | 1975 | | | | | | | | | 1976 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Petroleum | Manufacturing | | | | | Trade | Other | Total | Petroleum | Manufacturing | | | | Trade | Other |
| | | | Total | Chemicals and allied products | Machinery | Transportation equipment | Other | | | | | Total | Chemicals and allied products | Machinery | Transportation equipment | Other | | |
| All areas | 3,543 | 343 | 2,098 | 439 | 837 | 194 | 627 | 186 | 916 | 3,522 | 368 | 2,100 | 448 | 866 | 222 | 564 | 182 | 872 |
| Royalties & license fees | 1,886 | 16 | 1,573 | 317 | 837 | 34 | 385 | 142 | 155 | 1,949 | 13 | 1,619 | 326 | 897 | 37 | 359 | 134 | 184 |
| Other | 1,657 | 327 | 525 | 122 | 1 | 160 | 242 | 44 | 761 | 1,573 | 356 | 481 | 122 | -31 | 185 | 205 | 49 | 687 |
| Developed countries | 2,770 | 167 | 1,887 | 382 | 798 | 175 | 533 | 146 | 569 | 2,793 | 159 | 1,918 | 405 | 828 | 201 | 483 | 143 | 573 |
| Royalties & license fees | 1,707 | 11 | 1,450 | 276 | 806 | 25 | 344 | 122 | 124 | 1,786 | 8 | 1,504 | 288 | 863 | 31 | 322 | 115 | 160 |
| Other | 1,063 | 156 | 437 | 106 | -6 | 149 | 190 | 25 | 445 | 1,007 | 151 | 414 | 117 | -35 | 170 | 161 | 28 | 414 |
| Canada | 566 | 39 | 400 | 60 | 114 | 120 | 106 | 23 | 105 | 633 | 27 | 451 | 63 | 121 | 151 | 116 | 31 | 124 |
| Royalties & license fees | 198 | 2 | 182 | 37 | 85 | 5 | 55 | 9 | 5 | 228 | (*) | 211 | 36 | 98 | (D) | (D) | 12 | 5 |
| Other | 368 | 37 | 218 | 23 | 29 | 115 | 51 | 13 | 100 | 405 | 27 | 241 | 25 | 23 | (D) | (D) | 18 | 119 |
| Europe | 1,765 | 109 | 1,199 | 271 | 556 | 41 | 332 | 95 | 362 | 1,700 | 115 | 1,145 | 285 | 543 | 36 | 281 | 81 | 360 |
| Royalties & license fees | 1,240 | 9 | 1,045 | 202 | 609 | 14 | 220 | 86 | 100 | 1,251 | 7 | 1,037 | 208 | 624 | 12 | 194 | 74 | 133 |
| Other | 525 | 100 | 155 | 69 | -53 | 27 | 112 | 9 | 262 | 449 | 108 | 107 | 77 | -81 | 24 | 87 | 7 | 227 |
| European Communities (9) | 1,532 | 95 | 1,086 | 250 | 513 | 35 | 288 | 75 | 276 | 1,471 | 99 | 1,043 | 264 | 499 | 34 | 246 | 57 | 272 |
| Royalties & license fees | 1,090 | 9 | 978 | 185 | 587 | (D) | (D) | 69 | 34 | 1,090 | 7 | 972 | 191 | 599 | 12 | 171 | 56 | 54 |
| Other | 443 | 87 | 107 | 65 | -74 | (D) | (D) | 6 | 242 | 381 | 92 | 71 | 73 | -100 | 22 | 76 | (*) | 218 |
| Belgium & Luxembourg | 126 | (D) | 105 | 35 | 65 | (*) | 5 | 8 | (D) | 116 | (D) | 105 | 30 | 68 | 1 | 6 | 4 | (D) |
| Royalties & license fees | 89 | (D) | 75 | 22 | 45 | (*) | 7 | 12 | (D) | 85 | 1 | 74 | 20 | 45 | 1 | 8 | 9 | 2 |
| Other | 37 | 3 | 30 | 13 | 20 | (*) | -2 | -4 | 8 | 31 | (D) | 31 | 10 | 23 | (*) | -2 | -5 | (D) |
| France | 266 | 17 | 201 | 33 | 87 | 7 | 74 | 11 | 37 | 223 | (D) | 166 | 32 | 78 | 6 | 52 | 5 | (D) |
| Royalties & license fees | 253 | (*) | 237 | 29 | 143 | 6 | 59 | 14 | 1 | 225 | (*) | 211 | 28 | 140 | 5 | 39 | 12 | 2 |
| Other | 13 | 17 | -36 | 4 | -55 | (*) | 15 | -4 | 36 | -2 | (D) | -45 | 4 | -62 | (*) | 13 | -7 | (D) |
| Germany | 307 | (D) | 238 | 40 | 144 | 11 | 44 | 14 | (D) | 296 | (D) | 240 | 56 | 135 | 9 | 41 | 12 | (D) |
| Royalties & license fees | 253 | (*) | 236 | 29 | 183 | (*) | 23 | 10 | 6 | 270 | 1 | 253 | 37 | (D) | (D) | 24 | 9 | 7 |
| Other | 54 | (D) | 2 | 10 | -39 | 11 | 20 | 3 | (D) | 26 | (D) | -13 | 19 | (D) | (D) | 17 | 3 | (D) |
| Italy | 157 | 40 | 118 | 28 | 67 | 2 | 22 | 8 | 21 | 152 | 8 | 115 | 25 | 73 | 1 | 15 | 8 | 21 |
| Royalties & license fees | 109 | (*) | 102 | 20 | 69 | 1 | 13 | 6 | 1 | 108 | (D) | 102 | 17 | 75 | 1 | 8 | 6 | (D) |
| Other | 49 | 10 | 16 | 8 | -2 | 1 | 9 | 2 | 20 | 44 | (D) | 13 | 8 | -2 | (*) | 7 | 3 | (D) |
| Netherlands | 161 | 12 | 70 | 28 | 11 | 1 | 29 | 7 | 72 | 170 | 5 | 81 | 31 | 17 | (*) | 33 | 6 | 78 |
| Royalties & license fees | 83 | (D) | 74 | 24 | 31 | (*) | 19 | 6 | (D) | 102 | 0 | 83 | 26 | 36 | 1 | 21 | 5 | 14 |
| Other | 77 | (D) | -4 | 4 | -19 | 1 | 10 | 1 | (D) | 68 | 5 | -2 | 5 | -20 | 17 | 12 | 1 | 64 |

(*)Less than $500,000 (±). (D)Suppressed to avoid disclosure of data of individual companies.
1/ Royalties and license fees consist of payments for the sale or use of intangible property such as patents, processes, trademarks and copyrights; "other" fees consist of management fees, service charges, film and television tape rentals, and rentals for tangible property.

Source: "Survey of Current Business," Aug. 1977. Full chart not shown.



APPENDIX IV

## DIRECT INVESTMENT PAYMENTS OF FEES AND ROYALTIES, 1974-76

(Millions of dollars)

| | 1974 | 1975 | 1976 |
|---|---|---|---|
| All areas | 160 | 287 | 274 |
| Manufacturing | 200 | 217 | 209 |
| Other | -40 | 70 | 65 |
| Canada | 46 | 139 | 135 |
| Manufacturing | 1 | 40 | 36 |
| Other | 45 | 99 | 99 |
| Europe | 174 | 159 | 150 |
| Manufacturing | 198 | 166 | 167 |
| Other | -24 | -7 | -17 |
| United Kingdom | 17 | 26 | 3 |
| Manufacturing | 17 | 13 | 8 |
| Other | (*) | 14 | -5 |
| Switzerland | 154 | 115 | 129 |
| Manufacturing | 158 | 116 | 130 |
| Other | -4 | -1 | -1 |
| Other Europe | 3 | 18 | 18 |
| Manufacturing | 23 | 38 | 30 |
| Other | -20 | -20 | -12 |
| Japan | -47 | -26 | -36 |
| Manufacturing | (*) | 8 | 4 |
| Other | -47 | -33 | -40 |
| Other | -13 | 14 | 25 |
| Manufacturing | 1 | 3 | 2 |
| Other | -14 | 11 | 23 |

*Less than $500,000 (±).

Source: "Survey of Current Business," Oct. 1977.

(990516)