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Nº 102

Economic Intelligence Report

IMPORTS OF MACHINERY  
AND TRANSPORTATION EQUIPMENT  
BY COMMUNIST CHINA

1950-58



CIA/RR ER 60-22

September 1960

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

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FOREWORD

This report describes the level, direction, and composition of imports of machinery and transportation equipment by Communist China. The available data on the value of these imports are examined and compared with those on total imports in order to place in perspective the imports of machinery and transportation equipment.

The report delineates the requirements of Communist China for machinery and transportation equipment for developing the country under the Second Five Year Plan (1958-62). After considering official Chinese Communist claims for self-sufficiency in production of machinery and transportation equipment, the report describes in general terms the types and amounts of such equipment that Communist China will need to import.

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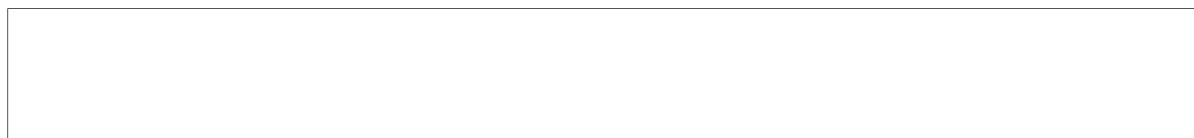
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IMPORTS OF MACHINERY AND TRANSPORTATION EQUIPMENT  
BY COMMUNIST CHINA\*  
1950-58

Summary and Conclusions

Since the Communists assumed control over the mainland of China in 1949, the nation has been a heavy net importer of machinery and transportation equipment. During 1950-58, Communist China imported machinery and transportation equipment amounting to at least US \$3,330 million, the major part of which was obtained during 1953-58. Imports of machinery and transportation equipment have increased at an average annual rate of slightly more than 18 percent since 1953 and, in spite of fluctuations in total imports, rose steadily in absolute terms during 1950-58. The fact that machinery and transportation equipment accounted for about 30 percent of total imports under the First Five Year Plan (1953-57) illustrates the dependence of Communist China on foreign sources in its effort to industrialize the nation.

The USSR was Communist China's principal supplier of machinery and transportation equipment during 1953-58, followed, respectively, by the European Satellites and the Free World. Of the total imports of machinery and transportation equipment during that period, Communist China received approximately 51 percent from the USSR, 41 percent from the European Satellites, and 8 percent from the Free World. Although imports of machinery and transportation equipment from the European Satellites were lower in volume than those from the USSR, a much higher percentage of total imports from the European Satellites consisted of machinery and transportation equipment -- 76 percent of total imports from the European Satellites compared with 36 percent of total imports from the USSR. Of the Satellite countries, East Germany and Czechoslovakia, the two most industrialized nations, were the leading exporters of machinery and transportation equipment to China. Hungary, Poland, Rumania, and Bulgaria, in that order, followed next in importance. Imports of machinery and transportation equipment from the Free World, which were small until 1955, have increased since then but still are small compared with imports of machinery and transportation equipment from the USSR and the European Satellites.

\* The estimates and conclusions in this report represent the best judgment of this Office as of 1 July 1960.

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Complete installations of machinery are the most important items of machinery and transportation equipment, in terms of value, imported from countries of the Soviet Bloc. Such installations constituted more than three-fourths of China's imports of machinery and transportation equipment from the USSR in 1957 and currently account for more than one-third of total imports from the European Satellites. Imports of individual items of machinery were sizable during the period of economic restoration, 1950-52, and the early years of the First Five Year Plan (1953-57) but were relatively less important during the later years of the same plan. Among individual imports of machinery, some of the most important items are metalcutting machine tools, transportation equipment, petroleum equipment, mining machinery, electro-technical equipment, precision instruments, construction equipment, and tractors and farm machinery. Imports of machinery and transportation equipment from the Free World consisted solely of individual items of machinery, the most important broad category of which was nonelectrical machinery, followed in importance by electrical machinery and transportation equipment.

Although Communist China depended heavily on imports of machinery and transportation equipment through 1958, the nation has made considerable progress toward attaining economic self-sufficiency in production of machinery and transportation equipment. By the end of 1957 the domestic machine building industry was able to satisfy 55 percent of national requirements for machinery and transportation equipment, including about 42 percent of the equipment for the 156 Soviet aid projects. According to official Chinese announcements, China met 78 percent of its requirements for machinery and transportation equipment in 1958 and will supply 45 to 50 percent of the equipment needed for the 78 new Soviet aid projects. In spite of such progress a number of significant gaps remain in the machine building industry of China, particularly in the manufacture of heavy and precision machinery. The domestic machine building industry will not be capable of meeting the entire demand by China for machinery and transportation equipment under the Second Five Year Plan (1958-62). Although China made considerable progress in the manufacture of metallurgical equipment during 1958-59, it still depends on imports for complex rolling mills, selected components for blast furnaces, and various other types of metallurgical equipment. China will import large amounts of petroleum equipment, at least through 1960. Imports of transportation equipment will be limited largely to diesel and electric locomotives. Also, China will have to import equipment for generating electric power and equipment for the chemical industry, especially for production of chemical fertilizer. Heavy, precision, and specialized types of machine tools also will be imported.

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I. Level of Trade in Machinery and Transportation Equipment\*

A. Value\*\*

Since the assumption of Communist control over the mainland in 1949, China has relied heavily on imports of machinery and transportation equipment in order to carry out its program for rapid industrialization. During 1950-58, Communist China imported machinery and transportation equipment the estimated value of which amounted to at least US \$3,330 million. Approximately 12 percent of this amount was imported during the period of economic restoration, 1950-52. The larger part of this amount, about 88 percent, was imported during 1953-58. Table 1\*\*\* shows the estimated value of the machinery and transportation equipment imported by Communist China during 1950-58.

A comparison of the value of machinery and transportation equipment imported by Communist China with the value of machinery and transportation equipment imported by other nations gives some indication of the general magnitude of China's imports. Under the First Five Year Plan (1953-57), China imported machinery and transportation equipment valued at US \$2,212 million. India, also an underdeveloped country, imported machinery and transportation equipment valued at about US \$2,265 million during 1953-57. 1/† Industrialized nations such as the US, the UK, and West Germany imported machinery and transportation equipment valued at US \$2,673 million, US \$2,185 million, and US \$1,339 million, respectively, during the same period. 2/

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\* The term machinery and transportation equipment as used in this report includes generally the same coverage as the Standard International Trade Classification for Machinery and Transportation Equipment (SITC 7). Each of the European Satellites aggregates its trade in machinery according to different definitions. East Germany, for example, includes "castings and forgings," whereas others exclude this category. The differences are not important, however, in evaluating the over-all trends in trade in machinery and transportation equipment. The great bulk of the trade in metalworking, chemical, electrical, and agricultural machinery and all kinds of transportation equipment is included in all of the reporting classifications.

\*\* Because of the lack of data from Chinese Communist sources on imports of machinery and transportation equipment, all monetary values in this report are based primarily on the more extensive data available from sources other than Chinese Communist. All values in this report are given in current US dollars unless otherwise indicated and are converted at the official exchange rates of the countries of the Soviet Bloc.

\*\*\* Table 1 follows on p. 4.



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Table 1  
Communist China: Imports of Machinery and Transportation Equipment  
1950-58

<u>Year</u>	<u>Total Imports a/ (Million US \$)</u>	<u>Imports of Machinery and Transportation Equipment b/ (Million US \$)</u>	<u>Percent of Total Imports</u>
1950	590	68 <u>e/</u>	11.5
1951	1,075	163 <u>d/</u>	15.2
1952	1,025	183 <u>d/</u>	17.9
1953	1,270	303 <u>e/</u>	23.9
1954	1,245	376 <u>e/</u>	30.2
1955	1,690	412	24.4
1956	1,475	546	37.0
1957	1,430	575 <u>f/</u>	40.2
1958	1,770	708 <u>e/</u>	40.0
Total		<u>3,334</u>	

b. Minimum amounts based on available information.

c. Including imports from the Free World, the USSR, and Poland only. Data on imports from other European Satellites are not available.

d. Including imports from the Free World, the USSR, Poland, and Hungary only. Data on imports from other European Satellites are not available.

e. Excluding imports from Rumania, for which data are not available.

f. Excluding imports from Bulgaria, for which data are not available but are believed to be insignificant.

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Imports of machinery and transportation equipment by Communist China increased at an average annual rate of slightly more than 18 percent from 1953 through 1958, and this rate reflected the reliance of the regime on such imports to achieve rapid industrialization. Even so, the rate of growth was uneven, rising to 33 percent in 1956 and dropping off to about 5 percent in 1957. The declining rate of growth in imports of machinery and transportation equipment in 1957 reflected, in general, certain adjustments undertaken in the Chinese economy that resulted in reduced investment in fixed capital in heavy industry and greater dependence on domestic supplies of machinery and transportation equipment. The reduced rate of growth in 1957 was largely absorbed in China's trade with the USSR, from which imports of machinery and transportation equipment declined by approximately 11 percent compared with that in 1956. Imports of machinery and transportation equipment from the European Satellites and the Free World continued to rise in 1957, and, in spite of changes in the rate of growth, imports of machinery and transportation equipment, unlike total imports, rose steadily in absolute terms during the entire period 1950-58 (see the chart, Figure 1\*).

B. Importance

An analysis of the role of imports of machinery and transportation equipment in the total imports by Communist China reveals the striking changes that have occurred in the pattern of trade in China under the Communists compared with that in pre-Communist days. During 1935-37, only 14 percent of total Chinese imports consisted of machinery and transportation equipment. <sup>4/</sup> Immediately after the Communist occupation of the mainland in 1949, imports of luxury items and consumer goods fell rapidly, and the decline in such imports was matched by a corresponding increase in imports of capital goods.

Because China needed all types of goods for the general restoration of the economy during 1950-52, the percentage of imports of machinery and transportation equipment was lower than under the First Five Year Plan (1953-57) (see Table 1). In addition, the trade controls operative during 1950-52, Chinese requirements for military goods, and lack of definite plans for development were factors accounting for the low percentage share of machinery and transportation equipment in total Chinese imports. Beginning with the First Five Year Plan, when the Chinese Communists began to plan a program of industrialization, the percentage of imports of machinery and transportation equipment increased rapidly and accounted for about 30 percent of total

\* Following p. 6.

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imports,\* and under the Second Five Year Plan (1958-62) the percentage probably will be even higher. This shift to emphasis on imports of machinery and transportation equipment reflects the priority that the Chinese Communists allocated to a high rate of net capital formation and the priority development of heavy industry.

The importance of trade to the industrial development of China also is reflected in the import of other items. Articles in the Chinese Communist press have stated that, in addition to the 60 percent occupied by machinery and transportation equipment, about 30 percent of total Chinese imports under the First Five Year Plan consisted of essential raw materials such as metals and ores and petroleum and petroleum products.\* Consumer goods accounted for only 10 percent of total Chinese imports during 1953-57.

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\* According to official Chinese Communist sources, approximately 60 percent of the total imports under the First Five Year Plan consisted of machinery and transportation equipment. 5/ The discrepancy in the percentage figures, 30 percent compared with 60 percent, results from the fact that some military goods probably are included in the Chinese statement but have not been included in the information (other than Chinese Communist) on which this report is based. The Chinese may also include in the category machinery and transportation equipment some items, such as some ferrous metal products, which strictly speaking are not components of the category machinery and transportation equipment as reported in the non-Chinese Communist sources. Moreover, the Chinese statement probably is based on yuan values that because of the Chinese multiple exchange rate system overstate the relative importance of Bloc trade and hence the proportion of machinery and transportation equipment to total imports.

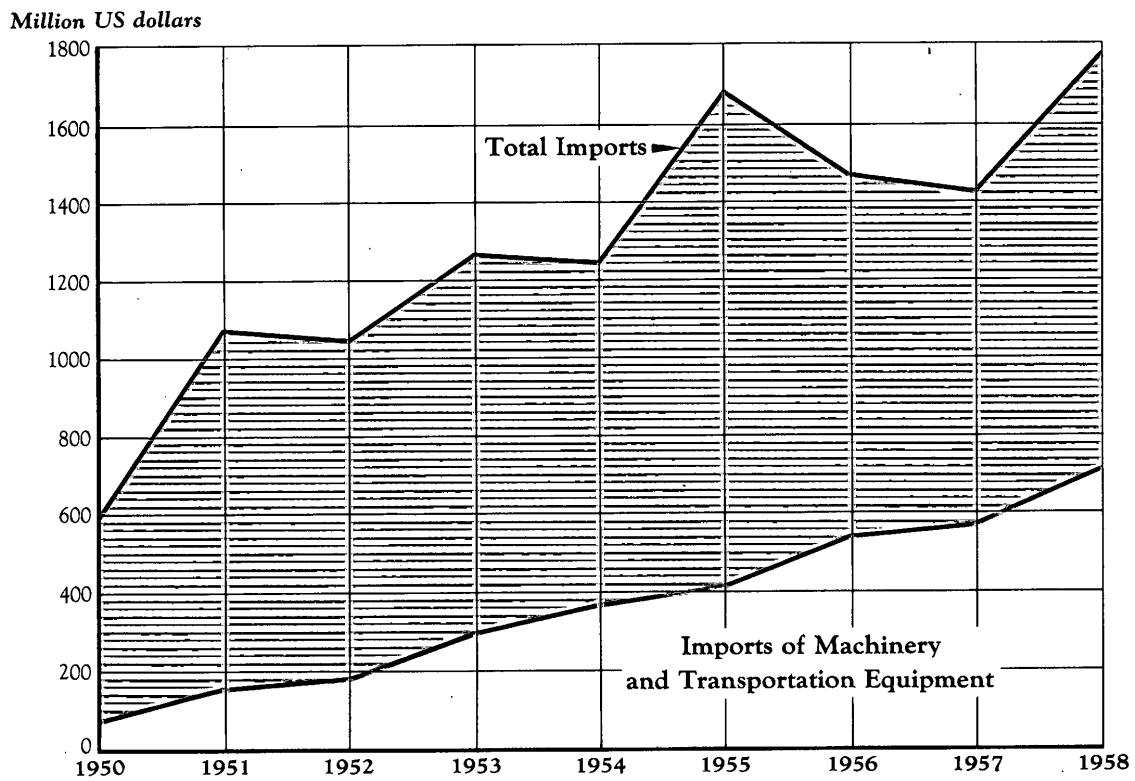
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Figure 1

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COMMUNIST CHINA  
ESTIMATED GROWTH OF IMPORTS OF MACHINERY  
AND TRANSPORTATION EQUIPMENT, 1950-58



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## II. Geographical Distribution

### A. General

The traditional pattern of trade in machinery and transportation equipment has been recast since 1949 by Communist China and now is oriented predominantly toward the Soviet Bloc. Between 1936 and 1938, for example, approximately 99 percent of the machinery and transportation equipment imported by Nationalist China came from the West, and only about 1 percent from the countries that now comprise the Soviet Bloc. 6/ During 1953-58 the Soviet Bloc accounted for approximately 92 percent of the machinery and transportation equipment imported by Communist China in contrast to pre-Communist days, when the volume of such exports from the countries presently in the Soviet Bloc was quite insignificant. This reversal in the trade pattern of Communist China took place partly within a political-military context. The Korean War and the general imposition of trade controls by non-Communist countries had some influence on the change in the direction of imports by China of machinery and transportation equipment. Ideological affinity between the leaders of China and other countries of the Bloc also was a factor in this reorientation. Moreover, there exists a rational economic basis for trade in machinery and transportation equipment between the relatively underdeveloped economy of China and the industrialized economies of the USSR and the European Satellites.

As shown in Table 15\* the share of the Soviet Bloc in Communist China's total imports of machinery and transportation equipment rose from 62 percent in 1950 to a high of 96 percent in 1954 and 1955 and fell to approximately 89 percent in 1957. From the end of 1951, a time of general tightening of the controls applied by the Free World to trade with Communist China, through 1955, imports of machinery and transportation equipment by China from the Free World were small. Since 1956, however, imports in this category from the Free World have increased, and the estimated distribution by dollar value during 1950-58 is shown in Table 14.\*\* (For charts showing the geographic distribution by dollar value of Chinese imports of machinery and transportation equipment during 1953-58 and for selected years, see Figures 2 and 3.\*\*\*)

### B. USSR

During 1953-58 the USSR was the major supplier of machinery and transportation equipment to Communist China. As shown in Figure 2,

\* Appendix A, p. 50, below.

\*\* Appendix A, p. 48, below.

\*\*\* Following p. 8.

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approximately 51 percent of the machinery and transportation equipment imported by China during that period came from the USSR.

Chinese imports of machinery and transportation equipment from the USSR have grown rapidly since the establishment of the Communist regime in China. Such rapid growth was due in large measure to the extensive imports of complete sets of equipment for the Soviet aid projects.\* The estimated growth of imports of machinery and transportation equipment by China from the USSR for 1950-58 is shown in the accompanying chart, Figure 4.\*\* During 1953-56, Chinese imports of machinery and transportation equipment from the USSR increased approximately 86 percent. As shown in Table 14,\*\*\* imports in this category under the First Five Year Plan (1953-57) reached a peak in 1956, when such imports amounted to US \$305 million. The share of the USSR in Chinese imports of machinery and transportation equipment fell to US \$272 million in 1957, but this decline does not establish a trend away from reliance on the USSR as a major supplier. Imports of machinery and transportation equipment from the USSR in 1958 increased by about 17 percent compared with those in 1957. The "leap forward" program in China's economic development in 1958 increased the demand for some types of machinery and transportation equipment: for example, imports of transportation equipment from the USSR rose markedly in 1958.† Chinese imports of machinery and transportation equipment from the USSR in 1959 were expected to be at least double those of 1958. † Because China has a continuing need to import many types of heavy equipment and precision machinery, an increase in imports of machinery from the USSR is not surprising. More important, however, is the fact that China has a continuing need for importing complete sets of equipment from the USSR in order to complete previously contracted Soviet aid projects as well as to construct 78 newly contracted projects.\* This fact alone would seem to insure that the USSR will be a leading supplier of machinery and transportation equipment to China under the Second Five Year Plan (1958-62).

Imports of machinery and transportation equipment by Communist China from the USSR occupy a very sizable part of total Chinese imports from the USSR. It is estimated that during 1953-58 approximately 36 percent of total imports from the USSR consisted of machinery and transportation equipment. The percentage share of machinery and transportation equipment in total imports from the USSR has continued to rise annually, from 24 percent in 1953 to a high of 50 percent in 1958 (see Table 2††). Even in 1957, when Chinese imports of machinery and transportation equipment declined, the percentage share of machinery and transportation equipment in total Chinese imports

\* See the first footnote on p. 9.

\*\* Following p. 8.

\*\*\* Appendix A, p. 48, below.

† See III, B, p. 21, below.

†† Table 2 follows on p. 10.



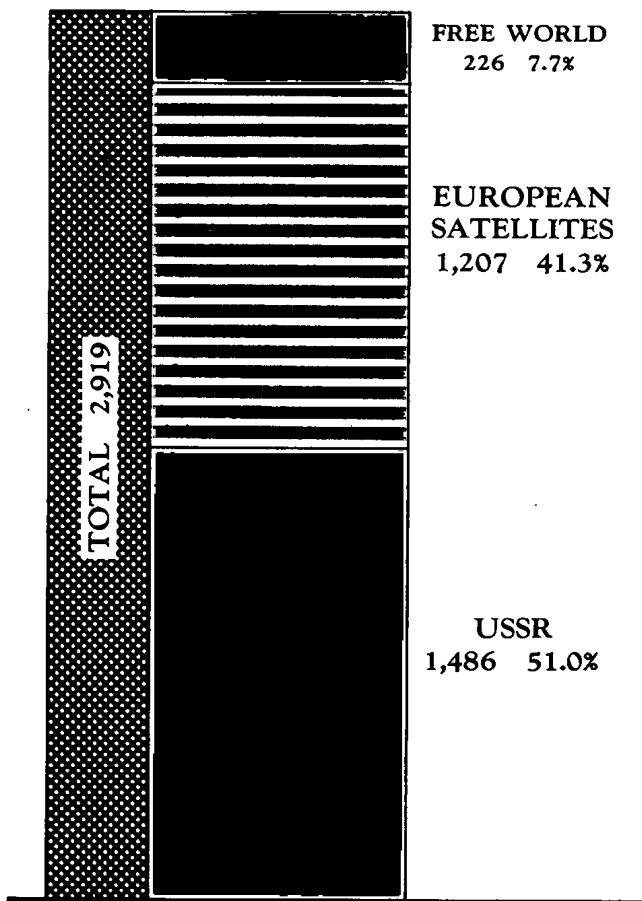


Figure 2

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COMMUNIST CHINA  
ESTIMATED IMPORTS  
OF MACHINERY AND TRANSPORTATION  
EQUIPMENT, BY AREA, 1953-58

*Million US dollars*



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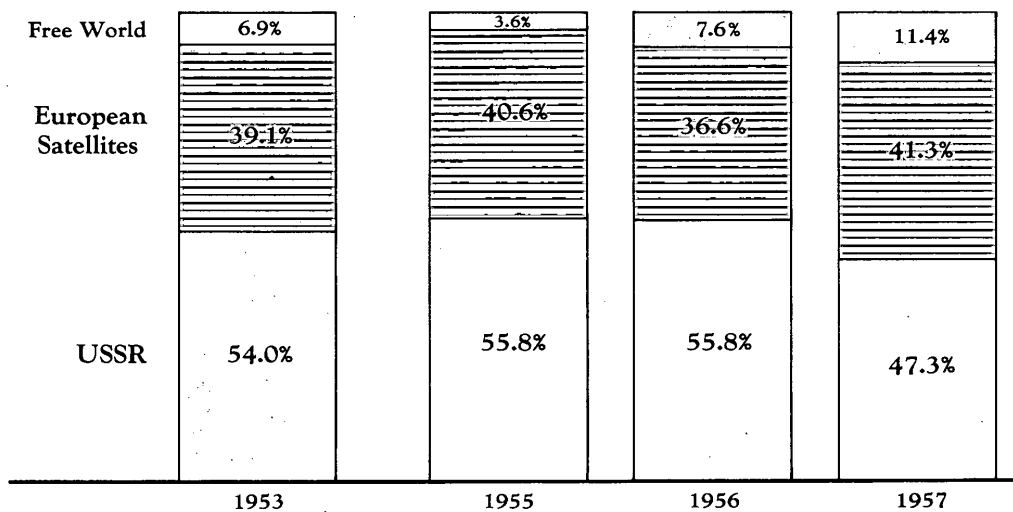
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Figure 3

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COMMUNIST CHINA  
ESTIMATED DISTRIBUTION OF IMPORTS OF MACHINERY  
AND TRANSPORTATION EQUIPMENT, BY PERCENTAGE, 1953 AND 1955-57



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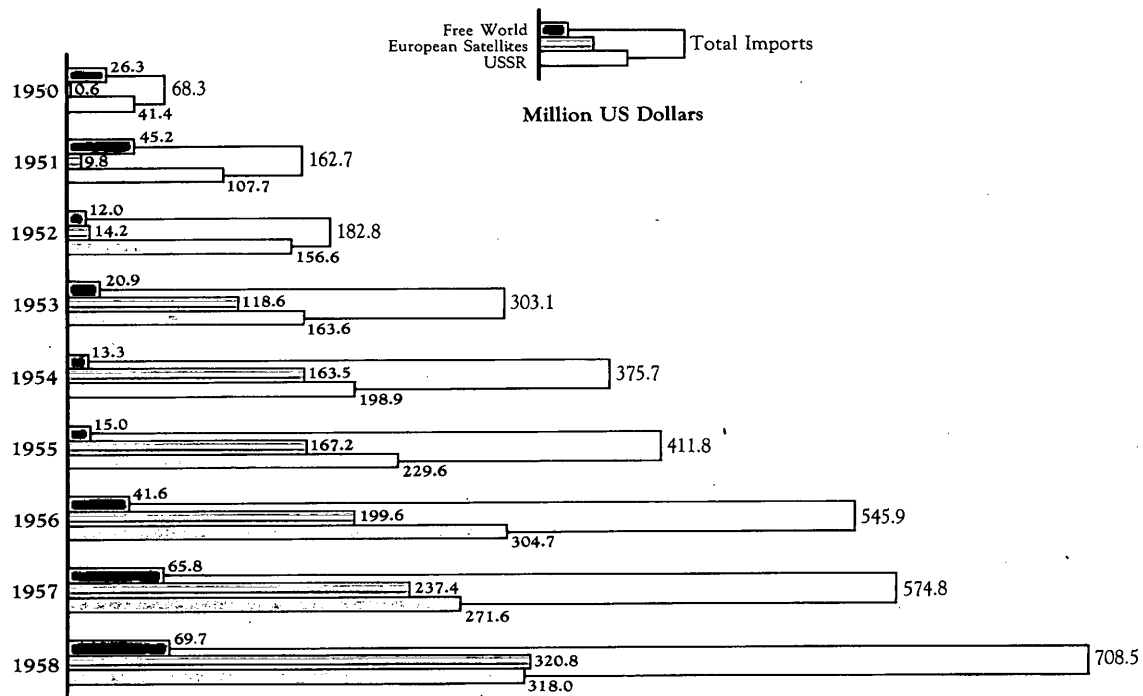


COMMUNIST CHINA

Figure 4

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ESTIMATED GROWTH OF IMPORTS OF MACHINERY AND  
TRANSPORTATION EQUIPMENT FROM THE USSR, THE EUROPEAN SATELLITES,  
AND THE FREE WORLD, 1950-58



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rose to 50 percent compared with 42 percent in 1956. This trend undoubtedly reflects the intentions of the Chinese to import only those items that are most essential for their rapid industrialization program -- that is, machinery and transportation equipment. The rise in the percentage share of machinery and transportation equipment in total imports from the USSR also is due partly to the growing self-sufficiency of China in producing industrial raw materials.

Although China was and continues to be so heavily dependent on the USSR for large quantities of machinery and transportation equipment, economic credits extended to China by its relatively opulent ally during 1950-59 amounted to only US \$430 million. This amount was fully drawn on by China by the end of 1957 to cover a part of the cost of machinery and equipment necessary for the Soviet aid projects,\* the total value of which amounts to US \$3,275 million. Consequently, it appears that only about 13 percent of the total cost in foreign exchange of these industrial aid projects is covered by Soviet credits and that the major part of the cost of the Soviet aid projects is financed by current exports from China.\*\*

#### C. European Satellites

Unlike Sino-Soviet trade, no long-term credits have been extended in Sino-Satellite trade. Most Sino-Satellite commodity transactions and payments for services are financed through bilateral clearing accounts, and for 1951-57 as a whole Sino-Satellite clearing accounts were approximately in balance.\*\*\*

\* For 3 years following April 1956 the number of Soviet aid projects was reported as 211. Of these, only 205 were considered by the Chinese Communists to be industrial construction projects. The remaining six involved the construction of research institutes and the renovation or expansion of previously constructed projects. In April 1959 the number of projects reportedly had been reduced from 211 to 166 as a result of the merging of some of these projects during their construction. In addition to these 166 projects, the USSR is to assist in the construction of 125 additional projects in accordance with the two agreements signed by the USSR and China in August 1958 and February 1959. 8/ Thus the total number of Soviet aid projects probably stands at 291. There is, however, some ambiguity in the announcements regarding Sino-Soviet economic agreements, and, therefore, the total of 291 should not be interpreted as the precise number of Soviet aid projects. Moreover, any estimate of the number of projects may be misleading, for the projects vary considerably in size, value, and scope.

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Table 2

Communist China:  
Imports of Machinery and Transportation Equipment  
from the USSR as Reported by the USSR a/  
1950-58

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Year	Total Imports from the USSR (Million US \$)	Imports of Machinery and Transportation Equipment (Million US \$)	Percent of Total Imports
1950	388.2	41.4	10.7
1951	476.3	107.7	22.6
1952	554.2	156.6	28.3
1953	697.6	163.6	23.5
1954	759.3	198.9	26.2
1955	748.4	229.6	30.7
1956	733.0	304.7	41.6
1957	544.1	271.6	49.9
1958	634.0	318.0	50.2

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a. 11/

Even though no long-term credits were extended in Sino-Satellite trade, the European Satellites during 1953-58 supplied approximately 41 percent of the machinery and transportation equipment imported by Communist China. The estimated percentage distribution of these imports by China from the European Satellites for 1950-58 is shown in Table 15.\* (For a chart showing the estimated percentage distribution of Chinese imports of machinery and transportation equipment from the European Satellites, see Figure 5.\*\*) East Germany and Czechoslovakia, the two most industrialized Satellite countries, were the leading suppliers among the Satellites of machinery and transportation equipment to China during 1953-58. Hungary, Poland, Rumania, and Bulgaria, in that order, followed next in importance during that period.

As shown in Table 14,\*\*\* imports of machinery and transportation equipment by Communist China from the European Satellites were small during 1950-52 but increased rapidly thereafter. The growth of

\* Appendix A, p. 50, below.

\*\* Following p. 10.

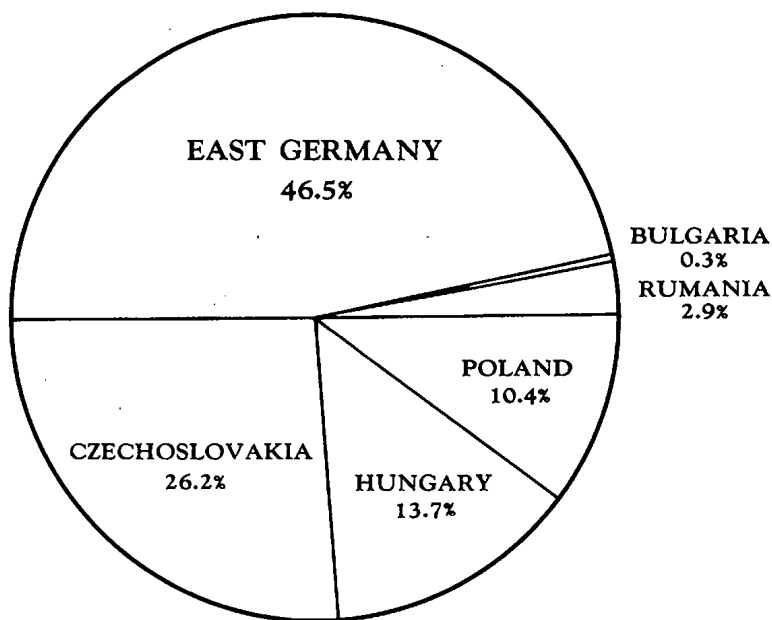
\*\*\* Appendix A, p. 48, below.



Figure 5

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COMMUNIST CHINA  
ESTIMATED DISTRIBUTION OF IMPORTS OF MACHINERY  
AND TRANSPORTATION EQUIPMENT  
FROM THE EUROPEAN SATELLITES, BY PERCENTAGE  
1953-57



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these imports from the European Satellites is shown in the chart, Figure 4.\* Imports of machinery and transportation equipment from the European Satellites increased at an average annual rate of about 20 percent under the First Five Year Plan, rising from an estimated minimum of US \$119 million in 1953 to a minimum of US \$237 million in 1957. Although Chinese imports of machinery and transportation equipment from the USSR declined by 11 percent in 1957, imports in this category from the European Satellites increased about 19 percent above 1956. Information for 1958 indicates that Chinese imports of machinery and transportation equipment from the European Satellites amounted to about US \$321 million, an increase of 35 percent above those in 1957. Consequently, imports of machinery and transportation equipment from the European Satellites in 1958 were at about the same level as those from the USSR, which, as noted above, increased 17 percent above those in 1957 and amounted to US \$318 million.\*\*

The steady rise in Sino-Satellite trade should not be interpreted as an indication that Communist China prefers Satellite machinery or as a conscious effort by the Chinese to import increasing amounts of machinery and transportation equipment from the Satellites at the expense of other sources of supply. The Chinese probably actually desired to reduce imports of machinery and transportation equipment from the Satellites as well as from the USSR in 1957, but the inflexibility of Sino-Satellite trade arrangements reduced the possibilities, and an absolute increase in this trade occurred in 1957. The increased imports of machinery and transportation equipment from the Satellites in 1958 to a level that almost approximated imports in this category from the USSR in 1958 were due to special demands generated by the "leap forward" program. China's imports of machinery and transportation equipment were expected to return to a more normal pattern in 1959 with the USSR supplying most of these imports, probably more than US \$600 million worth, and the Satellites supplying a somewhat lesser part.\*\*

Machinery and transportation equipment accounted for approximately 76 percent of Communist China's total imports from the European Satellites during 1953-58. The percentage share of machinery and transportation equipment in total imports was much higher than that of the USSR which, as noted above, amounted to approximately 36 percent during the same period.\*\* As shown in Table 16\*\*\* the percentage share of machinery and transportation equipment in total Chinese imports from the European Satellites rose from 63 percent in 1953 to about 84 percent in 1958. Of the European Satellites, East Germany had the highest percentage of machinery and transportation equipment

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\* Following p. 8, above.

\*\* See p. 8, above.

\*\*\* Appendix A, p. 51, below.

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in its total exports to China except for 1957, when imports by China of machinery and transportation equipment as a percent of total imports from Czechoslovakia and Hungary were slightly higher. Information for 1958 shows a slight decline in the percentage share of machinery and transportation equipment in total imports from the European Satellites.

Of special interest is the conclusion of long-term (1959-62) trade agreements with the European Satellites. To date, such agreements probably have been signed with all of the European Satellites, and the period of these long-term trade agreements, 1959-62, coincides with the remaining years of China's Second Five Year Plan. Apparently these agreements are intended to facilitate coordination of foreign trade with internal economic planning. Moreover, such agreements probably are indicative of an effort to strengthen economic ties with the European Satellites.

D. Free World

The Free World supplied only a very small part, approximately 8 percent, of the machinery and transportation equipment imported by Communist China during 1953-58 (see the chart, Figure 2\*). Beginning in 1956, imports in this category from the Free World began to increase and rose from US \$15.0 million in 1955 to US \$69.7 million in 1958, an increase of about 365 percent (see Table 14\*\*). The estimated growth of China's imports of machinery and transportation equipment from the Free World is shown in Figure 4.\* During 1955-57, as China imported increasing amounts of machinery and transportation equipment from the Free World, the percentage share of such imports, compared with China's total imports of machinery and transportation equipment, rose from 3.6 percent in 1955 to approximately 11.4 percent in 1957 (see Table 15\*\*\*). In 1958 the percentage share of imports of machinery and transportation equipment from the Free World declined, but those from the Bloc increased to about 90 percent.

Apparently, increased imports by Communist China of machinery and transportation equipment in 1956 from countries of the Free World may have been due to the increased use of exceptions procedures by the European countries of the Coordinating Committee (COCOM).† Abandonment

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\* Following p. 8, above.

\*\* Appendix A, p. 48, below.

\*\*\* Appendix A, p. 50, below.

† Coordinating Committee of the Consultative Group, an international committee composed of representatives of 15 countries of the Free World, the function of which is to coordinate control of exports of strategic commodities to the Sino-Soviet Bloc.



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of the China Differential in 1957 does not appear to have had any immediate effect on such imports by China from the Free World. Paradoxically it appears that the increase in the value of exports to China from countries belonging to COCOM, since the relaxation of the controls in 1957, has been largely in noncontrolled items. 12/ Controls were revised again in August 1958, and statistical data are not yet available for an authoritative statement on the effect of that revision on the volume of imports of machinery and transportation equipment from the Free World.\* The percentage share of machinery and transportation equipment in total Chinese imports from the Free World is shown in Table 3.\*\* Although this percentage share rose in 1956 and 1957, it is still small compared with that occupied by machinery and transportation equipment in exports by the Soviet Bloc to China.

The major exporters in the Free World of machinery and transportation equipment to Communist China for 1956-58 are shown in Table 4.\*\*\* Japan held the leading position in 1956 but was outranked by Sweden in 1957, when Sweden exported approximately US \$24 million of mining and construction equipment to China. West Germany was the major supplier in the Free World of machinery and transportation equipment to China in 1958. The UK followed next in importance. Reportedly, exports of machinery (other than electrical machinery) by the UK to Communist China were higher in 1958 than in any previous year since World War II. 13/

The future course of imports of machinery and transportation by Communist China is difficult to predict at this time. As shown in Table 4, the increase in imports of machinery and transportation equipment in 1957 was due largely to the substantial increase in imports of machinery from Sweden with which a contract for about US \$24 million worth of mining machinery had been placed. In fact, had it not been for this one contract, exports of machinery and transportation equipment by the Free World to China in 1957 would have remained at about the same level as in 1956. Imports of machinery and transportation equipment from the Free World increased in 1958, but, as shown in Table 3, the increase was small compared with the increase in total imports. According to trade returns of 1958, therefore, the "leap forward" program did not stimulate great increases in imports of machinery and transportation equipment but rather a large increase in imports of items other than machinery. As noted previously, the increased imports of machinery and transportation equipment in 1958 came from the USSR and the European Satellites.†

\* See III, D, p. 31. below.

\*\* Table 3 follows on p. 14.

\*\*\* Table 4 follows on p. 15.

† See pp. 8 and 11, above.

Table 3

Communist China: Imports of Machinery and Transportation Equipment  
from the Free World as Reported by the Free World a/  
1953-58

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<u>Year</u>	<u>Total Imports (Million US \$)</u>	<u>Imports of Machinery and Transportation Equipment (Million US \$)</u>	<u>Percent of Total Imports</u>
1953	284	20.9	7.4
1954	293	13.3	4.5
1955	314	15.0	4.8
1956	432	41.6	9.6
1957	523	65.8	12.6
1958	767	69.7	9.1

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a. 14/. Some of the countries of the Free World designate trade with both Communist China and Nationalist China (Taiwan) under "China" without differentiation. In addition, a few of the countries of the Free World, such as Switzerland, include Hong Kong in their trade with "China." Consequently, the volume of trade between the Free World and Communist China is somewhat overstated, but the overstatement is not considered to be serious. The definition of China as determined by each country of the Free World will be indicated wherever necessary in the rest of this report.

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Table 4

Communist China: Imports of Machinery and Transportation Equipment  
from Selected Countries and Areas of the Free World a/  
1956-58

Country or Area	Thousand US \$		
	1956	1957	1958
Japan	12,113	7,636	4,304
West Germany	5,806	6,881	17,818
France	5,401	6,813	4,146
Switzerland	4,426	5,252	6,077
UK	2,689	3,782	11,247
Finland	1,754	2,745	1,340
Belgium-Luxembourg	1,517	3,759	3,919
Hong Kong	1,437	1,347	3,490
Sweden	1,420	23,518	7,505
Austria	1,051	1,562	4,064
Others	3,941	2,462	5,788
Total	<u>41,555</u>	<u>65,757</u>	<u>69,698</u>

a. 15/. The data in this table, as reported by countries of the Free World, refer as far as possible to Mainland (Communist) China, including the Inner Mongolian Autonomous Region, Tibet, and the area formerly known as Manchuria. Known exceptions to this rule are as follows: Austria includes exports to Outer Mongolia (1956 only); France includes exports to Taiwan (except July to December 1957); Switzerland includes exports to Taiwan, Hong Kong, and Macao; the UK includes exports to Outer Mongolia (1956 and 1958 only); and Hong Kong includes exports to Outer Mongolia (1958 only).

Information on exports of machinery and transportation equipment by the Free World to China in the first half of 1959 is not yet available except for the UK. Exports of machinery and transportation equipment from the UK to China for the first 6 months of 1959 showed a substantial increase above such exports for the same period in 1958. 16/ This increase is accounted for largely by deliveries against contracts signed in 1958 and cannot be viewed as an indicator of trade developments in 1959.

In conclusion, it is believed that any increase in imports of machinery and transportation equipment by Communist China from the Free World will occur within the context of expanding such imports

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from all areas and that, therefore, the present position of the Soviet Bloc in such trade will not be altered materially. The signing of long-term trade agreements with the Satellites and the large increases in imports of machinery from the USSR necessary for the completion of Soviet aid projects indicate that China's trade in machinery and transportation equipment will be largely committed to the Soviet Bloc. It is anticipated that China's earnings of convertible currencies will be limited and that, therefore, China's imports of machinery and transportation equipment from the Free World will be limited.

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### III. Commodity Composition

#### A. General

The available information on the commodity composition of imports of machinery and transportation equipment by Communist China is presented by geographic area.\* From an analysis of this information, the following three trends emerge: (1) the increasing importance of importing complete installations\*\* of machinery; (2) the large imports of individual items of machinery during the period of economic restoration, 1950-52, and the early years of the First Five Year Plan (1953-57); and (3) a somewhat reduced import of some individual types of machinery and transportation equipment during the latter part of the First Five Year Plan.

Complete installations are the most important item in Chinese imports of machinery and transportation equipment from the Soviet Bloc, and no known imports of complete installations came from the Free World. Imports of complete installations from the Soviet Bloc were limited during the period of economic restoration, 1950-52, but increased rapidly under the First Five Year Plan (1953-57) and accounted for more than three-fourths of the machinery and transportation equipment imported from the USSR in 1957. During 1953-57, 135 Soviet aid projects had been started, and 68 of these were completed by 1957. 17/ Although imports of complete installations from the USSR decreased in 1958, imports in this category reportedly were to be 80 percent higher in 1959. 18/ Under the Second Five Year Plan (1958-62), imports of complete installations as a part of total

\* See pp. 19 to 32, below.

\*\* The term complete sets of equipment or complete installations is a commodity category which is employed in reporting on foreign trade of the Sino-Soviet Bloc and which covers the import and export of technical services and equipment combined in a single unit. Complete installations vary from small units such as air-conditioning equipment designed for specific use in a textile mill to very large units such as an industrial complex consisting of many separate plants. They may include reequipping the existing plants such as the Mukden Machine Tool Plant No. 1 as well as the construction of new ones such as the T'ai-yuan Heavy Machinery Plant. Complete installations may be entirely equipped with imported machinery or may be partly equipped with Chinese machinery. The Chinese claim, for example, that by the end of 1957 they were supplying about 42 percent of the equipment needed for the 156 Soviet aid projects. The 78 projects called for in the most recent Sino-Soviet aid agreement are to be 45 to 50 percent equipped by China. The common ingredient in complete installations is the technical services required for design, manufacture, and installation of equipment as a complete unit.

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imports of machinery and transportation equipment from the USSR will increase and probably account for more than 80 percent of total imports of machinery from that country. Complete installations currently account for more than one-third of China's total imports from the European Satellites, and their proportion is increasing yearly. The construction of 68 Satellite aid projects was undertaken under the First Five Year Plan, and 44 of these were completed by the end of 1958. 19/ Complete installations accounted for more than 46 percent of Chinese imports of machinery and transportation equipment from East Germany in 1957, and planned imports of complete installations in 1958 were to account for about 65 percent of such imports from East Germany. In 1956-57 imports of complete installations accounted for more than 50 percent of the machinery and transportation equipment that China received from Czechoslovakia.

Among imports of individual items of machinery by Communist China, some of the most important are metalcutting machine tools, transportation equipment, petroleum equipment, mining machinery, electrotechnical equipment, construction equipment, tractors and farm machinery, and precision instruments. Under the First Five Year Plan, China imported more than 21,000 metalcutting machine tools, more than 1,400 drilling machines, 1,562 railroad coaches, more than 40,000 trucks, and 16,000 tractors. 20/ Between 1953 and 1956, about 300,000 electrical precision instruments were imported. 21/ The available information on China's imports of individual items of machinery from specific countries is summarized below.\* Especially noteworthy are the individual types of machinery and transportation equipment imported from the various countries of the Soviet Bloc, including: (1) optical and precision instruments, transportation equipment, and electrotechnical equipment from East Germany; (2) certain types of transportation equipment, power generating equipment,\*\* and heavy equipment from Czechoslovakia; (3) transportation equipment, communications equipment, and agricultural machinery from Hungary; (4) large imports of tractors and farm machinery and oceangoing ships from Poland; (5) the wide range of items of machinery imported from the USSR; and (6) the limited nature of imports of machinery from Bulgaria and Rumania.

China reduced somewhat the import of many individual types of machinery and transportation equipment in the last years of the First Five Year Plan. 22/ In 1957, for example, imports of Soviet tractors and agricultural machinery, oil well drilling equipment, and power generating equipment decreased markedly. The value of trucks imported from the USSR in 1957 decreased by about US \$12 million compared with

\* See pp. 19 to 32, below.

\*\* For purposes of this report, power generating equipment is used to refer to equipment for the electric power industry.

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that in 1956. This decline reflects, in part, the opening of the Ch'ang-ch'un Automobile Plant No. 1. To some extent, increased Chinese self-sufficiency was responsible for the reduction of individual imports of machinery in 1957, but shifts in policy on agricultural mechanization and a reduced volume of capital construction also were contributing factors.

B. USSR

The most important item in imports of machinery and transportation equipment by Communist China from the USSR is complete installations. As shown in Table 5,\* imports in this category were relatively limited during the period of economic restoration, 1950-52, but rose rapidly thereafter. Under the First Five Year Plan (1953-57), imports of complete installations increased approximately 324 percent. By 1957, imports of complete installations accounted for about 77 percent of total Chinese imports of machinery and transportation equipment from the USSR but declined in 1958 by about US \$43 million. This decline -- a temporary situation -- should not be interpreted as an indication that the USSR is limiting arbitrarily deliveries of complete installations. Instead, the decline was occasioned by increased imports by China of individual items of machinery which had more immediate utility and which were necessary to relieve bottlenecks that had developed in the Chinese economy under the "leap forward" program. For example, large imports of transportation equipment were needed in 1958 in order to ease the serious dislocations in the transportation system that were created by the pressing demands of the "leap forward" program. Imports of complete installations reportedly will be 80 percent higher in 1959. 23/ Because of the large volume of unfulfilled Soviet commitments to deliver complete installations under previous agreements as well as of the new agreement calling for the delivery of 78 additional complete installations, it seems certain that imports of complete installations will increase rapidly under the Second Five Year Plan (1958-62) and probably will account for more than 80 percent of the machinery and transportation equipment which China will import annually from the USSR.

The major importance of these aid projects is the actual role that they perform in the industrialization program of Communist China. For example, nearly 60 percent of the production of iron and steel in Communist China in 1957 reportedly was produced in plants built with the assistance of the USSR. 24/ Also, powerplants built with Soviet aid were reported to account for about 680,000 kilowatts (kw) of a total capacity of approximately 4.4 million kw in 1957. 25/ In the machine building industry the USSR constructed at least 26 plants,

\* Table 5 follows on p. 20.

Table 5

Communist China: Imports of Complete Installations from the USSR  
as Reported by the USSR  
1950-58

<u>Year</u>	<u>Total Imports of Machinery and Transportation Equipment (Million US \$)</u>	<u>Imports of Complete Installations a/ (Million US \$)</u>	<u>Complete Installations as Percent of Total Imports of Machinery and Transportation Equipment</u>
1950	41.4	1.0	2.4
1951	107.7	32.2	29.9
1952	156.6	40.7	26.0
1953	163.6	49.3	30.1
1954	198.9	93.1	46.8
1955	229.6	141.5	61.6
1956	304.7	217.0	71.2
1957	271.6	209.0	77.0
1958	318.0	166.2	52.3

a. 26/



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among which are some of the most important machine building plants in Communist China such as the Ch'ang-ch'un Automobile Plant No. 1, the Harbin Steam Turbine Plant, the Lo-yang Tractor Plant, the Wu-han Heavy Machine Tool Plant, the T'ai-yuan and Fu-la-erh-chi Heavy Machinery Plants and others. According to a Chinese Communist official of the State Planning Commission, the projects constructed with Soviet assistance during 1953-56 in the coal, electric power, iron, steel, copper, aluminum, and machine building industries accounted for 30 to 90 percent of newly added productive capabilities of their respective industries. 27/

Among individual imports of machinery from the USSR under the First Five Year Plan, China received large quantities of machine tools, approximately 10,000 agricultural machines, about 100 million yuan worth of scientific apparatus, and large amounts of other equipment. 28/ The commodity composition of Chinese imports of individual items of machinery from the USSR during 1955-58 is shown in Table 17.\* The most important items, in terms of value, during 1955-57 were oil well drilling equipment valued at US \$45 million, automotive equipment valued at US \$44 million, tractors and farm machinery valued at US \$22 million, and power generating equipment valued at US \$19 million. Other important imports of machinery included electrotechnical equipment, metal-working machine tools, excavators and road building equipment, and pump-compressor equipment, in that order.

Automotive equipment, including automotive spare parts, was the most outstanding item imported in 1958. Imports in this category alone amounted to US \$62 million, or about US \$57 million more than in 1957. More than 20,000 trucks were imported in 1958 compared with 284 in 1957. Compared with 1957, deliveries of machine tools more than doubled in 1958, and imports of railroad rolling stock increased about 16 times. Imports of power generating equipment increased 148 percent and of tractors and farm machinery more than 330 percent.

According to the trade agreement concluded in 1959 between Communist China and the USSR, the USSR will deliver to China, in addition to larger quantities of complete installations, greater quantities of power generating equipment, specifically turbine generator sets, diesel generators, mobile power stations, and small hydropower stations for use in rural areas. 29/

\* Appendix A, p. 53, below.

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C. European Satellites

1. East Germany

The outstanding feature of the commodity composition of machinery and transportation equipment exported by East Germany to Communist China is the increase in number of complete installations. Beginning in 1956, the proportion has increased considerably. Of the machinery and transportation equipment imported from East Germany, complete installations accounted for 31 percent in 1956 and approximately 65 percent in 1958, as shown in Table 6.\* Reportedly, East Germany has contracted to deliver more than 50 complete installations to China. 30/ Among these are cement plants, glass plants, 16 powerplants, an electric cable shop, a plant to produce thermometers and temperature control devices, a large plant for making abrasives, two plants for producing synthetic fibers, a plant for radio communications equipment, sugar refineries, cotton spinning mills, and others. 31/ By the end of the First Five Year Plan, nine of these installations had been completed, and the remainder were scheduled for completion under the Second Five Year Plan. Contracts for the delivery of additional complete installations to China were concluded in 1958 and 1959. These agreements provide for the export to China during 1959-62 of four nitrogen fertilizer plants, four 50,000 kilowatt turbo-generator sets for a powerplant in Mukden, eight similar sets of equipment for a plant north of Mukden, forty-two 3,000 to 5,000 kw turbo-generator sets for other unspecified plants, and for the delivery of four more cement plants during 1959-61. 32/

The available information on the commodity composition of individual types of machinery and transportation equipment exported to Communist China by East Germany is shown in Table 7.\*\* The value of transportation equipment, of which refrigerator cars represent a leading item, increased six times between 1952 and 1956. 33/ China purchased from East Germany 200 refrigerator cars in 1955 and 10 in 1956. 34/ Other important East German exports to China include precision and optical instruments, various types of electrotechnical equipment, and machine tools. China reportedly is East Germany's largest market for precision and optical instruments. 35/ According to the trade agreement concluded in 1959 between China and East Germany, East Germany will export to China complete installations, machine tools, forging and pressing equipment, rolling stock, electrical equipment, and precision and optical instruments. 36/

\* Table 6 follows on p. 23.

\*\* Table 7 follows on p. 24.

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Table 6

Communist China  
Imports of Complete Installations from East Germany  
1956-58

<u>Year</u>	<u>Total Imports of Machinery and Transportation Equipment (Million US \$)</u>	<u>Imports of Complete Installations (Million US \$)</u>	<u>Percent of Total Imports of Machinery and Transportation Equipment</u>
1956	85.4	26.6 a/	31.1
1957	95.2	44.4 b/	46.6
1958	120.0 c/	78.0 c/	65.0

50X1

c. Estimated.

2. Czechoslovakia

Complete installations also have been the leading commodity group exported by Czechoslovakia to Communist China in recent years. As shown in Table 8,\* imports in this category, as a percent of total imports of machinery, rose from about 32 percent in 1955 to 55 percent in 1957.

Most of the complete installations imported from Czechoslovakia consist of completely equipped power plants, 39/ including some small mobile electric powerplants for use in regions not yet electrified or as a source of power for construction work. 40/ Czechoslovakia reportedly delivered 42 of these small powerplants to China during 1956-58, 22 of which were in operation by 1958. 41/ Other types of powerplants also have been imported from Czechoslovakia. Czechoslovakia exported five hydroelectric powerplants to China in 1959, and during 1961-62 Czechoslovakia will deliver four hydroelectric powerplants, each with a capacity of 42 megawatts. 42/ Other complete industrial units supplied by Czechoslovakia include sugar refineries, cement plants, film laboratories, and chemical plants. 43/ Projects completed by Czechoslovakia in China in 1958 include a large sugar cane mill with a daily capacity of 2,000 tons\*\* of cane and a modern film laboratory capable of processing 60 million meters of film

\* Table 8 follows on p. 25.

\*\* Tonnages are given in metric tons throughout this report.

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annually. <sup>44/</sup> An announcement in 1959 stated that Czechoslovakia would supply China with five oxygen plants, each having a capacity of 3,000 cubic meters of oxygen an hour. <sup>45/</sup>

Table 7

Communist China: Commodity Composition  
of Imports of Machinery and Transportation Equipment  
from East Germany  
1956 and 1958

Commodity	Million US \$	
	1956 <sup>a/</sup>	1958 <sup>b/</sup>
Total imports of machinery and transportation equipment	85.4	120.0 <sup>c/</sup>
Of which:		
Complete installations	26.6	78.0 <sup>c/</sup>
Metalworking machine tools	3.8	4.7
Equipment for the chemical industry	2.8	1.1
Transportation equipment	30.4	11.0
Equipment for light industry	1.9	N.A.
Electrotechnical equipment	5.7	2.8
Precision and optical instruments	N.A.	5.3
Power generating equipment	N.A.	0.7
Hoisting and transporting equipment	N.A.	3.3
Antifriction bearings	N.A.	0.2
Equipment for printing industry	N.A.	2.2
All other machinery and equipment	14.2	0.3

a. <sup>46/</sup>

c. Estimated.

50X1

Although detailed information on China's imports of individual items of machinery and transportation equipment from Czechoslovakia is not available, the most important items are machine tools, vehicles, tractors and agricultural equipment, diesel engines, and measuring instruments. In 1958, about 10,000 Czechoslovak buses and trucks were reportedly in use in China. <sup>48/</sup> Imports of tractors and farm machinery appear to be increasing. China has imported more than

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5,000 Czechoslovak "Zetor" tractors [redacted] 50X1  
[redacted] Imports of farm machinery in 1958 numbered 50X1  
about 11,000 units. 50/

Table 8

Communist China:  
Imports of Complete Installations from Czechoslovakia  
1955-57

Year	Total Imports of Machinery and Transportation Equipment (Million US \$)	Imports of Complete Installations a/ (Million US \$)	Percent of Total Imports of Machinery and Transportation Equipment
1955	37.4	11.8	31.6
1956	55.0	28.3	51.4
1957	73.9	40.5	54.8

a. 51/

According to a trade agreement signed in 1959 between  
China and Czechoslovakia covering 1960-62, China will import from  
Czechoslovakia powerplants and complete installations for the chemi-  
cal and metallurgical industries as well as heavy lathes, electric  
motors, and locomotives. 52/

50X1  
50X1

3. Poland

As in the case of East Germany and Czechoslovakia, com-  
plete installations of machinery constitute an important and growing  
share of imports of machinery and transportation equipment from Po-  
land by Communist China. By 1957, China had signed contracts with  
Poland for the delivery during 1956-62 of complete installations  
valued at about US \$55 million (see Table 9\*). 54/

China signed an additional contract in 1958 for the de-  
livery of complete installations valued at more than US \$57 million. 55/

\* Table 9 follows on p. 27.

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This amount is assumed tentatively to cover the cost of the 17 complete installations mentioned in the long-term trade agreement concluded between China and Poland for 1959-62. 56/ The composition of these 17 installations was reported as follows: six coal washing installations, three nitrate fertilizer plants, four wallboard plants, a complete set of coal mining equipment, a cement plant, a plant for extracting resin, and a plant for building freight cars. 57/ These 17 installations originally were scheduled to be delivered to China by 1962. According to Ta Kung Pao, 24 July 1959, however, Poland is now scheduled to supply China with 16 complete installations, and these are to be delivered through 1965. 58/

The available information on China's imports of individual units of machinery and transportation equipment from Poland is summarized in Table 18.\* During 1955-57 the most important machinery imported from Poland in terms of value was ships. Imports in this category amounted to about US \$25 million. Under the long-term trade agreement, 1959-62, Poland will supply China with five ships of 10,000 tons displacement each and two ships of 18,000 tons displacement each. 59/ Other imports of machinery from Poland include machine tools, automotive transportation equipment, tractors, and farm machinery. By 1959, more than 1,400 Polish "Ursus" tractors, 1,500 threshing machines, 3,500 sheaf binding machines, 4,000 mowers, 6,700 plow tractors, 3,000 chaff cutters, 2,000 harrow discs, and 3,000 potato digging machines reportedly were in use in China. 60/

4. Hungary

As shown in Table 16,\*\* machinery and transportation equipment have constituted the largest proportion of Hungarian exports to Communist China, but complete information on the commodity composition of these exports is not available. The available data for 1956 and 1958-59 are shown in Table 10.\*\*\* It is clear from the data in Table 10 and from other sources that Hungarian exports of machinery and transportation equipment to China consisted mainly of transportation equipment, various types of electrical equipment, agricultural equipment, machine tools, and instruments. In terms of value, motor vehicles reportedly accounted for about 25 percent of total Chinese imports from Hungary under the First Five Year Plan. 61/ It is also reported that during 1953-58 China imported from Hungary a total of 2,000 machine tools, 2,000 buses, 6,000 trucks, 4,000 tractors, and more than 700 harvester-threshers. In the same period, China imported from Hungary transmission engineering equipment valued at US \$12.5 million and instruments valued at about US \$9.0 million. 62/

\* Appendix A, p. 55, below.

\*\* Appendix A, p. 51, below.

\*\*\* Table 10 follows on p. 28.

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Table 9

Communist China:  
Imports of Complete Installations from Poland a/

<u>Type of Installation</u>	<u>Number</u>	<u>Cost (Million US \$)</u>	<u>Delivery Date</u>
Sugar refining	1	11.3	1959 <u>b/</u>
Coal washing	1	12.0	1956-62 <u>c/</u>
Wood distillation	1	2.0	1958 <u>c/</u>
Battery manufacturing	1	1.3	1957-58 <u>c/</u>
Coal mining	1	1.3	N.A.
Other	N.A.	27.4	
Announced total	N.A.	<u>55.3</u>	

a.

The installations included are believed to be those for which contracts were signed during 1956-57.

b. 64/

c. Plan.

50X1  
50X1

Hungarian exports to China of complete installations have gained in importance since 1956. Several thermal electric powerplants have been exported to China as well as complete mine installations, oxygen plants, cooling plants, and radio transmitting stations. 65/ During 1957 an agreement was signed between China and Hungary for the planning, construction, and equipping by Hungarian specialists of a tube rolling mill in China. 66/

It is estimated that Chinese imports of machinery and transportation equipment as a part of total imports from Hungary will continue to increase, at least through 1962. According to the long-term trade agreement between China and Hungary, approximately 95 percent of exports by Hungary to China will consist of products of the engineering and precision instrument industries. 67/ Hungarian exports to China will include equipment for electric plants, refrigerators, diesel engines, railroad cars, lathes, and communications equipment. In particular, Hungary is to deliver to China by 1962 25 turbines for electric powerplants. 68/

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Table 10

Communist China: Commodity Composition  
of Imports of Machinery and Transportation Equipment from Hungary  
1956 and 1958-59

Commodity	1956		1958		1959	
	Units	Value (Million US \$)	Units	Value (Million US \$)	Units	Value (Million US \$)
Total imports of machinery and transportation equipment	N.A.	22.9	N.A.	52.0	N.A.	N.A.
Of which:						
Mining equipment	N.A.	3.7 a/	N.A.	N.A.	N.A.	N.A.
Tractors and agricultural equipment	N.A.	5.3 a/	860 b/	N.A.	N.A.	N.A.
Carrier equipment	N.A.	N.A.	N.A.	N.A.	N.A.	5.0 c/
Transportation equipment	1,006 a/	N.A.	2,025 b/	N.A.	N.A.	N.A.
Power equipment	37 a/	N.A.	N.A.	1.0 b/	N.A.	N.A.
Radio equipment	567 a/	N.A.	N.A.	2.2 b/	N.A.	N.A.
Machine tools	N.A.	N.A.	385 b/	N.A.	N.A.	N.A.
Instruments	N.A.	N.A.	N.A.	2.6 b/	N.A.	1.7 d/
Broadcasting stations	N.A.	N.A.	N.A.	1.5 b/	N.A.	N.A.
Electrotechnical equipment	N.A.	N.A.	N.A.	9.0 b/	N.A.	N.A.

a. 69/b. 70/c. Plan. 71/d. Plan. 72/



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5. Rumania

On the basis of present information a detailed analysis of the commodity composition of machinery and transportation equipment imported by Communist China from Rumania is not possible. According to the terms of the several trade agreements concluded between China and Rumania and to other scattered bits of information, China's imports of machinery and transportation equipment from Rumania under the First Five Year Plan apparently were limited to a few items, chiefly oil well drilling equipment, oil tank cars, powerplant equipment, tractors, cement plant equipment, and blast furnace blowers. 73/ Rumania also will export these items to China under the long-term trade agreement for 1958-62 concluded by these two countries. 74/ The paucity of imports of machinery from Rumania is due in large measure to the fact that Rumania's machine building industry is quite limited in scope.

6. Bulgaria

Communist China's imports of machinery and transportation equipment from Bulgaria were almost negligible before 1953 and even throughout the First Five Year Plan amounted to only about US \$2.3 million. The available information on the commodity composition of Chinese imports of machinery and transportation equipment from Bulgaria is summarized in Table 11.\* China's imports of machinery from Bulgaria were restricted to a few products, chiefly lathes, electric motors, and agricultural equipment. An announcement stated that Bulgaria was to have delivered 12 diesel locomotives to Communist China in 1959. 75/

In addition to the annual trade protocols concluded between China and Bulgaria, an agreement was signed in October 1956 calling for the delivery to China of equipment for two flotation plants for concentrating lead and zinc ores. 76/ Reportedly, about 1,200 tons of equipment were to have been delivered for the two plants, which were scheduled to begin operation in 1959. 77/

China and Bulgaria also have concluded a long-term trade agreement which covers 1958-62. The items of machinery and transportation equipment which China plans to import from Bulgaria during this period are listed in Table 12.\*

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\* Table 11 follows on p. 30.

\*\* Table 12 follows on p. 32.

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Table 11

Communist China:  
Imports of Machinery and Transportation Equipment from Bulgaria a/  
1953-57

Commodity	1953		1954		1955		1956		1957	
	Units	Value (Million US \$)	Units	Value (Million US \$)	Units	Value (Million US \$)	Units	Value (Million US \$)	Units	Value (Million US \$)
Lathes	174	0.7	26	0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Electric motors	3,799	0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Tractor drawn plows	N.A.	N.A.	43	0.2	292	0.1	553	0.2	N.A.	N.A.
Tractor drawn seeders	N.A.	N.A.	20	Negligible	200	0.1	700	0.4	N.A.	N.A.
Sewing machines b/	N.A.	N.A.	N.A.	N.A.	200	N.A.	700	N.A.	N.A.	N.A.
Combines	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	68 c/	N.A.
Total d/	N.A.	1.2	N.A.	0.3	N.A.	0.2	N.A.	0.6	N.A.	N.A.

- a. [redacted]  
b. 79/  
c. 80/  
d. Minimum total based on available information.

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D. Free World

Unlike the commodity composition of imports of machinery and transportation equipment from the Soviet Bloc, such imports by Communist China from the Free World contained no complete installations but instead were restricted to individual items of machinery. As shown in Table 19,\* machinery (other than electrical) was the most important broad category of imports from the Free World during 1953-58, and, in terms of value, the most important types were conveying, hoisting, excavating, road construction, and mining machinery followed by antifriction bearings, textile machinery, metalworking machinery, power generating machinery, and tractors. Electrical machinery ranked second in importance of the machinery imported, followed closely by transportation equipment. Imports of transportation equipment from both the Free World and the USSR declined in 1957.

The three most important types of machinery and transportation equipment exported to China by the ten leading countries of the Free World during 1955-57 were conveying, hoisting, excavating, road construction, and mining machinery valued at about US \$32 million; transportation equipment valued at about US \$21 million; and electrical equipment valued at more than US \$18 million. Imports in these three categories accounted for approximately 60 percent of such imports by China during that period (see Table 20\*\*).

Almost all of China's imports from Sweden, the leading supplier in the Free World outside the Soviet Bloc of machinery to China, in terms of value, consisted of various types of conveying, hoisting, excavating, and mining machinery. The most important imports of machinery from other countries outside the Soviet Bloc were as follows: textile machinery from Japan; electrical machinery, especially electrical measuring instruments, and transportation equipment from West Germany; transportation equipment and conveying, hoisting, excavating, and mining machinery from France; paper and pulp mill machinery and oceangoing ships from Finland; various kinds of electrical machinery from the UK, Switzerland, and Belgium-Luxembourg; transportation equipment from Hong Kong; and metalworking machinery and transportation equipment from Austria.

The list of items embargoed in trade with Communist China was revised in August 1958, and no detailed discussion of that list will be undertaken in this report. Statistical data are not yet available for an authoritative statement on the effect of this revision that reduced the list of goods subject to complete embargo and discontinued

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\* Appendix A, p. 56, below.

\*\* Appendix A, p. 58, below.

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Table 12

Communist China:  
Planned Imports of Machinery and Transportation Equipment  
from Bulgaria a/  
1958-62

<u>Machinery</u>	<u>Unit</u>	<u>Volume</u>
Electric powerplants	Kilovolt amperes	46,800
Flotation plants	Million US \$	3.8
Electric motors	Kilowatts	100,000
Diesel motors	Units	400
Transformers	Kilovolt amperes	150,000

a. 81/

quantitative controls on the export of strategic goods. The goods freed for export to China include most types of machine tools, certain types of ships, aircraft and aircraft engines, some scientific equipment, all vehicles other than those built to military specifications, oil well drilling equipment, petrochemical plants, electric generators and motors, turbines, and most types of antifriction bearings. Except for antifriction bearings, it seems clear to date that this revision did not result in greatly increased purchases of machinery from the West.

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#### IV. The Drive of Communist China for Economic Self-Sufficiency\*

##### A. Achievements and Goals

The attainment of a high degree of economic self-sufficiency is a clearly stated goal of the Chinese Communists. Although, as noted above, China depended heavily on imports of machinery and transportation equipment under the First Five Year Plan (1953-57), the nation made considerable progress toward achieving economic self-sufficiency. By the end of 1957, the domestic machine building industry was able to satisfy 55 percent of national requirements for machinery and transportation equipment, including about 42 percent of the equipment for the 156 Soviet aid projects. <sup>82/</sup> The First Five Year Plan had called on the machine building industry to supply about 30 to 50 percent of the equipment needed for the 156 Soviet aid projects. <sup>83/</sup> The proportion of total requirements supplied by domestic production in 1957 for selected types of machinery and transportation equipment is shown in Table 13.\*\* More than 75 percent of the nation's requirements for machine tools, iron smelting equipment, transformers, and forging equipment reportedly could be supplied domestically by 1957, whereas 90 percent of the nation's requirements for equipment for steel smelting and light industry were being supplied by domestic industry in 1957.

As the First Five Year Plan (1953-57) drew to a close, more ambitious goals for self-sufficiency were set forth. The 78 projects called for in the most recent Sino-Soviet aid agreement are to be 45 to 50 percent equipped by China. <sup>84/</sup> The Chinese Communists originally claimed that, under the Second Five Year Plan (1958-62), they would attain 70 to 80 percent self-sufficiency in the supply of machinery and transportation equipment. <sup>85/</sup> A recent Chinese announcement states that, during 1958, China met 78 percent of its requirements for machinery. <sup>86/</sup> The demand for heavy machinery is to be satisfied to about 95 percent of requirements by domestic production during 1958-62.

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\* It should be noted that the discussion of self-sufficiency in this report refers to self-sufficiency only in terms of an underdeveloped country. That is, the demands for machinery and transportation equipment that can be effectively absorbed by the Chinese are still limited, and it is within this limited concept that the Chinese claim self-sufficiency for various types of machinery and transportation equipment. Advances in production, however, generate increased demands, thereby causing an accelerating effect that can destroy or impede progress toward self-sufficiency. Partly for this reason the major machinery importing countries also are the major producers of machinery. See also the footnote on p. 39, below.

\*\* Table 13 follows on p. 34.

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Table 13

Communist China:  
Degree of Self-Sufficiency in Producing Selected Types  
of Machinery and Transportation Equipment a/  
1957

<u>Item</u>	<u>Percent</u>
Medium trucks	14 <u>b/</u>
Machine tools	76 <u>c/</u>
Metallurgical equipment	20 <u>b/</u>
Iron smelting equipment	77 <u>d/</u>
Steel smelting equipment	90 <u>d/</u>
Steel rolling equipment	3 <u>e/</u>
Electrical equipment	18 <u>f/</u>
Heavy electrical equipment	10 <u>b/</u>
Steam turbines	20 <u>g/</u>
Electric generators	20 <u>g/</u>
Electric motors	10 <u>g/</u>
Transformers	85 <u>c/</u>
Machinery for light industry	90 <u>b/</u>
Oil drilling and exploratory equipment	20 <u>h/</u>
Antifriction bearings	50 <u>i/</u>

a. Official claims unless otherwise indicated.

b. 87/

c. Reported for 1956. 88/

d. 89/

e. Reported for 1953-57. 90/

f. Reported for 1953-57. 91/

g. Data given for the major category only. Degrees of self-sufficiency for selected subcategories are estimated.

h. 92/

i. Reported for 1958. 93/

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Some of the heavy machinery that the Chinese plan to produce include the following: blast furnaces with a capacity of 1,513 cubic meters, open-hearth furnaces with a capacity of 250 to 500 metric tons, type 1150 preliminary rolling mills with a capacity to produce annually 3 million to 3.5 million metric tons, complete sets of equipment to produce nitrogen fertilizer with a capacity to produce 50,000 metric tons of synthetic ammonia annually, 50,000-kilowatt and 100,000-kilowatt turbogenerator sets, complete sets of equipment for mobile electric power stations, boilers of large capacity, 13,000-horsepower marine steam turbines, 6,000-metric-ton hydraulic presses, 5-metric-ton die-forging hammers, complete sets of equipment for processing coal into coke and refining petroleum, winches with a diameter of 5 meters, a large overhead cable hoist with a capacity of 20 metric tons, equipment of large capacity for making cement, cranes for handling hot metal with a capacity of 350 metric tons, casting ladles with a capacity of 150 metric tons, and other types of heavy equipment. 94/

Several statements have been made on the goals set for self-sufficiency for other types of machinery and transportation equipment. The Chinese Communists will attempt to provide equipment for about 45 percent of thermal powerplants and 27 percent of hydroelectric powerplants under the plan. 95/ By 1960 or 1961, China plans to be self-sufficient in the production of all types of textile equipment. 96/ By 1962, China expects domestic production to meet 90 to 95 percent of the requirements for all machine tools, 86 percent for casting equipment, 80 percent for forging equipment, 95 percent for gauges and bits, 95 percent for grinders, and 100 percent for abrasives. 97/ Within the period of the Second Five Year Plan (1958-62), China intends to become self-sufficient in the production of all types of instruments. 98/ Moreover, official reports by the Chinese press in 1957 claimed that when the complex in Peking manufacturing telecommunications equipment enters capacity production, China's dependence on imported tubes and components will be eliminated, and its present requirements for civilian telecommunications equipment will be met. China's requirements for military electronic equipment will be partly met. 99/

It should be emphasized, however, that these claims of self-sufficiency are all official claims by the Chinese Communists and are overly ambitious. Although the Chinese claim that the demand for heavy machinery is to be 95 percent satisfied by domestic production during 1958-62 and set forth an ambitious array of the heavy machinery items to be produced, it is not clear whether these items are to enter serial production or are to consist merely of prototype production. Some of the other Chinese claims also are ambiguous. For example, although domestic production is expected to meet 90 to 95 percent of the

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requirements for all machine tools under the Second Five Year Plan (1958-62), it is not clear whether the Chinese mean all types of machine tools or merely general purpose machine tools. An independent evaluation of the capability of Communist China to satisfy its demands for machinery and transportation equipment during 1958-62 follows in Section V.\*

B. Restrictions on Imports of Capital Equipment from Foreign Countries

Evidence indicates that Communist China intends to substitute domestic machinery for that which formerly was imported. The Chinese Communists consider dependence on imports of capital goods a fundamental weakness in the structure of the economy which must be corrected as quickly as possible. The Chinese have stated that one of the important problems that has to be solved in the economic construction of China is the use of more machinery made in China. The Chinese have commented on this problem as follows:

In the past few years, the following contradictions existed in the economic construction of China. About 40 percent of the machinery equipment needed for national construction had to be imported, using large sums of foreign exchange; and at the same time much equipment and many workers of our Chinese machinery industry were idle. Because large quantities of foreign equipment were purchased, the investment funds for national construction were reduced. Due to the limited sale of China-made equipment, the development of our nation's machinery industry was also limited. 100/

As a solution to this problem, Chinese engineers will be expected to adjust their technical standards and specifications to Chinese production capabilities and to take account of the pressing need to utilize abundant manpower. That the Chinese intend to implement such a policy is clearly indicated in a rather lengthy article which discusses the shortage of low-voltage electrical equipment in 1959. No mention is made of satisfying the increased demand for this equipment by imports. Rather, the following steps are advocated: (1) low-voltage switch manufacturing bases should be established everywhere, (2) old plants will be renovated by utilizing new designs and establishing production lines, and (3) testing and research centers should be established to insure quality. 101/

\* P. 39, below.



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Of course, in addition to complete sets of equipment, the Chinese probably will continue to import certain specialized or intricate types of equipment rather than to produce these under poor production conditions. However, it does seem certain that China will avoid any imports which do not prove entirely superior to products which can be manufactured domestically.\* 103/ The Chinese intend to make the composition of imports of machinery and transportation equipment less diversified. 104/ Imports of simple machine tools, light electrical equipment, machinery for light industry, and other individual types of equipment will be curtailed.

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V. Future Requirements\*

Communist China's future requirements for machinery and transportation equipment will, of course, be determined by the regime in planning basic economic development. It appears that the development of industries providing materials, fuels, power, and transportation equipment will receive priority consideration under the Second Five Year Plan. Special attention is to be given to the production of iron, steel, coal, timber, cement, and raw materials for the chemical industry. The 1959 economic plan gave some idea of the emphasis to be placed on the various sectors of industry. The original economic plan for 1959 sets forth the following targets: steel, 18 million tons; coal, 380 million tons; electricity, 40 billion kilowatt-hours (kwh); and cement, 12.5 million tons. The targets for steel and coal were later cut to 12 million tons and 335 million tons, respectively. <sup>105/</sup> Even with these reduced targets, however, Chinese plans were still ambitious. In order to implement these basic development plans, large quantities of machinery will be required, especially for metallurgy, mining, generation of electric power, and production of chemicals and cement. Substantial amounts of transportation equipment also will be necessary to carry out these plans.

Although, as noted above, the Chinese Communists made considerable progress toward achieving economic self-sufficiency in the production of some types of machinery and transportation equipment under the First Five Year Plan, a number of important gaps still remain in China's machine building industry -- particularly significant in the production of heavy and precision machinery. Production of heavy machinery is

\* The term requirements as used in this report has the following meaning: given planned economic objectives, the term requirements denotes a quantity of goods which must be obtained either by domestic production and/or importation in any given year or period in order to satisfy the planned economic objectives. Requirements in this sense must be determined with the following operating factors in mind: (1) the goods which the planners feel will be necessary to carry out their planned economic objectives, (2) the amount of these goods which the planners estimate can be produced domestically, (3) the amount of these goods which is available for imports, and (4) the ability of the country to finance imports. Inherent in each of these operating factors is, of course, the possibility of dynamic change which could influence the formulation of requirements. Illustrations of dynamic changes would be a foreign exchange shortage which could affect the ability of the country to finance imports or changes in the Free World's embargo policy which could influence the amount and type of goods available for import. Import requirements as used in this report are the difference between the goods which the planners feel will be needed minus the amount of these goods which the planners estimate can be domestically produced.

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seriously hampered by deficient capacity for producing large-scale castings and forgings as well as by insufficient machinery for processing heavy equipment. 106/ Weaknesses are to be found in the production of forge-press machinery, steel rolling equipment, chemical equipment (including equipment for the production of nitrogen fertilizers), cement equipment, electric locomotives, precision lathes, measuring instruments, scientific instruments, and the production of complete sets of equipment, particularly electrical. 107/

As the Chinese Communists attempt to carry out their plans for industrialization, as outlined above, the requirements for these types of machinery and transportation equipment undoubtedly will grow. Manufacturing ability may well accelerate in the course of economic development, yet the domestic machine building industry probably will not be capable of meeting the entire demand under the Second Five Year Plan (1958-62). Although it is impossible to draw up a specific list of requirements for import, a general outline of the major types of machinery and transportation equipment that will have to be imported is presented below.

A. Mining and Metallurgical Equipment

It seems certain that Communist China must import part of the requirements for mining and metallurgical equipment, at least under the early years of the Second Five Year Plan. The Ministry of Metallurgical Industry has made plans for building four large integrated iron and steel plants, which will require large amounts of metallurgical equipment. Although China made considerable progress in the manufacture of metallurgical equipment during 1958 and 1959, it still depends on imports for complex rolling mills, selected components for blast furnaces, and various other types of metallurgical equipment.\* Late in 1958, Chao Erh-lu, Minister of the First Ministry of Machine Building, remarked that the question of supplying mining and steel rolling equipment requires immediate attention because the capacity of the country to supply these types of equipment is, as yet, inadequate to meet the needs. 108/ During 1958-60 the completion of capital construction projects at Fu-la-erh-chi, Shao-kuan, T'ai-yuan, and Lo-yang will add greatly to productive capacity in metallurgical and mining equipment.\*\* Nevertheless, it will probably be several years before this capacity can be exploited fully. Imports of metallurgical and mining equipment will come from both the Soviet Bloc and the Free World

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Moreover, there are indications that China has been attempting to import metallurgical

\* See Table 13, p. 34, above.

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and mining equipment from the markets of the Free World. Inquiries have been made [redacted] for such items as sintering plants for low-grade ferrite ores, blast furnaces, seamless tube mills, Bessemer converters, and various types of mining machinery. 111/

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B. Transportation Equipment

Under the Second Five Year Plan, Communist China should be able to satisfy a large part of its requirements for transportation equipment by domestic production. Estimated production of trucks plus imports of trucks from the USSR during 1955-58 amounted to approximately 53,000 units. The estimated production capacity of the Ch'ang-ch'un Automobile Plant No. 1 is about 60,000 units annually. Consequently, with this plant operating at full capacity along with some production of trucks at other smaller plants, China's requirements for trucks with a capacity of 4-1/2 to 5 tons should be fairly well satisfied domestically. Full capacity production, however, will depend to a great extent on an adequate supply of raw materials. Shortages of iron and steel, for example, could result in underutilization of domestic production capacity, thereby forcing the Chinese to rely on imports. Such a condition seems to exist at the present time. It was reported in February 1959 that production of motor vehicles in 1959 would be reduced because of changes in "steel material relationships" and that preparations for importing vehicles were being made. 112/ The Chinese are mass-producing only one model and size of truck -- the Liberation truck, with a capacity of 4-1/2 to 5 tons. The Chinese economy will require a greater variety of vehicles under the Second Five Year Plan, and probably these other types will have to be imported.

Communist China will produce most of the steam locomotives required under the Second Five Year Plan. In 1958, however, China did import some main-line steam passenger locomotives -- purchases dictated by the pressing demands of the "leap forward" program. 113/ China will require approximately 1,400 shunting locomotives by 1962, and, although the nation will attempt to cover a large part of this requirement by domestic production, it will also rely on imports. 114/ A large number of the locomotives imported by China under the Second Five Year Plan probably will consist of diesel and electric locomotives. In 1958, Peking purchased from France 25 electric locomotives valued at US \$10.5 million. These locomotives are to be delivered at intervals before October 1960. 115/ Imports of diesel locomotives probably will depend largely on the ability of China to provide adequate fuel for them. In addition to imports of diesel and electric locomotives, China also will produce domestically a small number of these locomotives during the remaining years of the Second Five Year Plan.

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C. Electrical Equipment

The largest part of electrical equipment imported by Communist China under the Second Five Year Plan (1958-62) will be power generating equipment for the electric power industry. The growth of the electric power industry in China, although substantial, has lagged behind the expansion of power-consuming industries. China has become acutely aware of the retarding effects of shortages of electric power on industrial development and has responded by mounting a rather ambitious program for overcoming this obstacle. Under the Second Five Year Plan, China will put into operation electric powerplants with an estimated capacity of 10.0 million kilowatts. 116/ In addition, construction of electric powerplants, which will enter into operation after 1962, will be undertaken during 1958-62. Consequently, substantial amounts of power generating equipment will be needed in China under the Second Five Year Plan.

In spite of considerable development under the First Five Year Plan in the industry producing power generating equipment for the electric power industry, China could meet only about 20 percent of its requirements for steam turbines and electric generators in 1957.\* In an effort to overcome the shortage of this equipment, the Chinese have made production of power generating equipment a matter of top priority. Plans of the First Ministry of Machine Building for 1959 state that priority in allocations for capital construction was to be given to producing generating equipment for the electric power industry. The only other item of machinery receiving such top consideration was metallurgical equipment. Generating equipment for the electric power industry was to be turned out in 1959 at a rate "not only unprecedented in the history of the industry," but above that for any other industry. 117/ The output of generating equipment in 1959 reportedly was 2.15 million kilowatts (kw), 118/ but, apparently, the Chinese Communists encountered difficulty in producing such equipment in 1959. Production of generators for hydroelectric powerplants during the first quarter of 1959 disclosed many problems arising from lack of experience. Of all the plants producing this type of generator, only one plant had had previous experience in the manufacture of these generators. 119/ Shortages of raw materials also have impeded production. 120/

Not until 1959 was China able to manufacture domestically large-size generating equipment of 50,000 and 72,500 kw. Production of 100,000-kw generating units will not be undertaken until later in the course of the Second Five Year Plan. Analysis indicated that the sizable part, a little less than one-half, of the power generating equipment needed to meet the requirements of China to produce electric power

\* See Table 13, p. 34, above.

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during 1958-62 must be imported. As previously noted, the USSR, East Germany, Czechoslovakia, Rumania, Bulgaria, and Hungary will be exporting electric power generating equipment to China under the Second Five Year Plan (1958-62).

Communist China will be in a somewhat better position to meet its requirements for other types of electrical equipment under the Second Five Year Plan. Imports of transformers probably will be limited to those of more than 100,000 kilovolt amperes (kva). China will be able to meet its demand for small electric motors, but medium-size and large electric motors will continue to be imported at least until the Chinese are able to make full use of the existing capacity for producing electric motors. Imports of electric motors from the USSR in 1958 increased above that in 1957. However, only 52 percent of the designed capacity of the shops producing medium-size and large electric motors at the Harbin Electrical Equipment Plant was being utilized in 1958. 121/

High priorities given to the construction of plants producing electronic equipment have permitted the Chinese to reduce drastically their dependence on outside sources of supply. Production achieved under the Second Five Year Plan should enable China to supply most of its domestic requirements for receiving tubes, electronic components (except some specialized primary components and materials), radio-broadcast receivers, telephones, manual switchboards, and wire-diffusion equipment.

#### D. Chemical Equipment

Under the Second Five Year Plan (1958-62) the chemical industry of Communist China is scheduled for rapid expansion, particularly in chemical fertilizers. Fulfillment of the goals of this plan in the chemical industry will depend on the supply of chemical equipment. Requirements for such equipment under the Second Five Year Plan will be about five times those of the First Five Year Plan. Although China had to import most of the chemical equipment needed during 1953-57, official announcements now claim that 90 percent of the chemical equipment required by the nation under the Second Five Year Plan will be supplied by domestic production. 122/ Yet the capability of Communist China to manufacture chemical equipment of the latest technology is extremely limited and probably will remain limited under the Second Five Year Plan. Manufacture of the principal types of machines and equipment to produce chemical fertilizer -- never before attempted by China -- requires a high level of technique especially for the high-pressure reflex cylinder and the high-pressure air compressor and represents a formidable engineering task for the relatively inexperienced machine building industry.

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In spite of the ambitious claims of the Chinese Communists, China probably will not be able to supply 90 percent of its requirements by domestic production and will be forced to import a fairly sizable quantity of equipment for the chemical industry if plans for expansion of the industry are to be fulfilled. Agreements already have been signed with some of the countries of the Soviet Bloc for delivery of chemical plants. During 1959-62, China will import four nitrogen fertilizer plants from East Germany, five oxygen plants from Czechoslovakia, and three nitrate fertilizer plants from Poland. In view of the general shortage of chemical equipment in the Soviet Bloc and the current plans for expansion of the chemical industries of the various countries of the Bloc, China probably will attempt to purchase some chemical equipment from the Free World. Indications are that the Chinese are attempting to obtain from France equipment to produce ammonia. 123/

E. Petroleum Equipment

Under the First Five Year Plan (1953-57), China relied heavily on imports to meet its demands for petroleum equipment. During 1953-56, China imported more than 1,400 mining drills, most of which came from the USSR and Rumania. 124/ Between 1955 and 1957, China imported from the USSR alone oil well drilling equipment worth more than US \$45 million. As shown in Table 13,\* China supplied only 20 percent of its requirements for drilling and exploratory equipment for the oil industry by the end of the First Five Year Plan.

The magnitude of the oil exploration effort will be increased considerably under the Second Five Year Plan. In 1958, the first year of the Second Five Year Plan, China imported oil well drilling equipment valued at about US \$11 million from the USSR. Plants scheduled for completion in 1959 will increase greatly China's present limited capability for producing drilling and refining equipment for the oil industry. Because of the magnitude of the oil exploration effort and because of inexperience, several years must elapse before the new capacity is exploited fully, and no significant improvement in this field is expected until 1960. Therefore, China probably will continue to import large amounts of petroleum equipment at least through 1960.

F. Metalworking Machinery

Communist China has relied heavily on imports to satisfy its requirements for metalworking machinery. Under the First Five Year Plan (1953-57), about 21,000 units of metalcutting machine tools were imported. 125/ However, the machine tool industry of China has

\* P. 34, above.

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developed rapidly, and by 1956, China reportedly could supply about 75 percent of its needs for this type of machinery. 126/

According to Communist claims, China will be able to supply about 90 to 95 percent of its requirements for machine tools by 1962. 127/ Domestic production of many types of machine tools possibly will be sufficient to meet China's requirements under the Second Five Year Plan, but still some types of heavy and precision machine tools will have to be imported. Among the latter are precision lathes, heavy duty lathes, and grinders and gear generation machines, especially machines for hobbing large-size gears and small precision machines for making watch and instrument gear wheels. 128/ Some boring machines probably will have to be imported, inasmuch as in 1959 boring operations were being used increasingly in processing new equipment and the scarcity of boring machines had become a major problem. 129/ Horizontal boring and milling machines and turbine gear hobbing machines valued at about US \$3 million were to be imported in 1959 from the Asquith Machine Tool Corporation and the David Brown Corporation of the UK. 130/

Because production of metalworking machinery in Communist China is confined largely to metalcutting machines, the nation under the Second Five Year Plan (1958-62) probably will have to import many types of metalforming machinery such as pressing, forging, shearing, bending, and hammering machines. About 250 units of forging machinery were to be imported in 1958. 131/

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APPENDIX A

STATISTICAL TABLES

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Table 14

Communist China: Estimated Distribution  
of Imports of Machinery and Transportation Equipment, by Value  
1950-58

	Million US \$								
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>
Trade with the Soviet Bloc									
USSR	41.4 a/*	107.7 b/	156.6 a/	163.6 a/	198.9 b/	229.6 c/	304.7 c/	271.6 d/	318.0 e/
European Satellites									
East Germany f/	N.A.	N.A.	N.A.	54.4	89.6	87.7	85.4	95.2	120.0 g/
Czechoslovakia	N.A.	N.A.	N.A.	30.4 g/	35.4 g/	37.4 h/	55.0 h/	73.9 h/	92.3 i/
Hungary j/	N.A.	9.0	11.9	24.8	22.3	24.5	22.9	27.2	52.0 g/
Poland	0.6 k/	0.8 k/	2.3 k/	7.8 k/	15.9 l/	13.9 l/	27.2 l/	27.1 l/	50.3 m/
Rumania	N.A.	N.A.	N.A.	N.A.	N.A.	3.5 n/	8.5 o/	14.0 p/	N.A.
Bulgaria q/	N.A.	N.A.	N.A.	1.2	0.3	0.2	0.6	N.A.	6.2 r/
Subtotal s/	0.6	9.8	14.2	118.6	163.5	167.2	199.6	237.4	320.8
Total s/	<u>42.0</u>	<u>117.5</u>	<u>170.8</u>	<u>282.2</u>	<u>362.4</u>	<u>396.8</u>	<u>504.3</u>	<u>509.0</u>	<u>638.8</u>
Trade with the Free World t/	<u>26.3</u>	<u>45.2</u>	<u>12.0</u>	<u>20.9</u>	<u>13.3</u>	<u>15.0</u>	<u>41.6</u>	<u>65.8</u>	<u>69.7</u>
Grand total s/	<u>68.3</u>	<u>162.7</u>	<u>182.8</u>	<u>303.1</u>	<u>375.7</u>	<u>411.8</u>	<u>545.9</u>	<u>574.8</u>	<u>708.5</u>

\* Footnotes for Table 14 follow on p. 49.

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Table 14

Communist China: Estimated Distribution  
of Imports of Machinery and Transportation Equipment, by Value  
1950-58  
(Continued)

- a. 132/  
b. 133/  
c. 134/  
d. 135/  
e. 136/  
f.  Machinery and equipment accounted for "almost 90 percent" of Chinese imports from East Germany, presumably as a general average, during 1953-57. 138/ 50X1  
g. Estimated.  
h. Machinery and transportation equipment accounted for 65 percent of exports from Czechoslovakia to China in 1955, 85 percent in 1956, and 91 percent in 1957. 139/  
i. 140/  
 50X1  
k. 142/  
l. 143/  
m. 144/  
n. Oil drilling equipment and complete equipment for electric powerplants comprised in 1955 more than 50 percent of the entire exports by Rumania to China. 145/  
o. In 1956, approximately 50 percent of total exports from Rumania to China consisted of machinery and transportation equipment. 146/  
p. In 1957, machinery and transportation equipment accounted for 93 percent of exports from Rumania to China. 147/  
 50X1  
r. 149/  
s. Minimum total based on available information.  
t. 150/

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Table 15

Communist China: Estimated Distribution of Imports  
of Machinery and Transportation Equipment, by Percentage  
1950-58

	Percent								
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>
Trade with the Soviet Bloc									
USSR	60.6	66.2	85.7	54.0	52.9	55.8	55.8	47.3	44.9
European Satellites	0.9	6.0	7.8	39.1	43.5	40.6	36.6	41.3	45.3
Subtotal	<u>61.5</u>	<u>72.2</u>	<u>93.5</u>	<u>93.1</u>	<u>96.4</u>	<u>96.4</u>	<u>92.4</u>	<u>88.6</u>	<u>90.2</u>
Trade with the Free World	<u>38.5</u>	<u>27.8</u>	<u>6.5</u>	<u>6.9</u>	<u>3.6</u>	<u>3.6</u>	<u>7.6</u>	<u>11.4</u>	<u>9.8</u>
Total	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

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Table 16

Communist China: Estimated Imports of Machinery and Transportation Equipment from the European Satellites  
1953-58

Country	1953			1954			1955			1956			1957			1958		
	Total Imports (Million US \$)	Imports of Machinery and Transportation Equipment (Million US \$)	Percent of Total	Total Imports (Million US \$)	Imports of Machinery and Transportation Equipment (Million US \$)	Percent of Total	Total Imports (Million US \$)	Imports of Machinery and Transportation Equipment (Million US \$)	Percent of Total	Total Imports (Million US \$)	Imports of Machinery and Transportation Equipment (Million US \$)	Percent of Total	Total Imports (Million US \$)	Imports of Machinery and Transportation Equipment (Million US \$)	Percent of Total	Total Imports (Million US \$)	Imports of Machinery and Transportation Equipment (Million US \$)	Percent of Total
European Satellites a/	127.0	118.6	63.4	231.8	163.5	70.5	237.9	167.2	70.3	263.1	199.6	75.9	280.6	237.4	84.6	302.8	320.8	83.8
East Germany b/	60.4	54.4	90.1	99.5	89.6	90.0	97.4	87.7	90.0	94.9	89.4	90.0	105.8	95.2	90.0	133.2	120.0	90.0
Czechoslovakia c/	60.7	30.4	50.1	64.4	35.4	55.0	57.6	37.4	64.9	64.7	55.0	81.2	73.9	91.0	109.2 d/	92.3	84.5	80.5
Hungary e/	29.6	24.8	83.8	30.9 f/	22.3	72.2	36.5	24.5	67.1	31.0	22.9	73.9	29.8	27.2	91.3	57.4 g/	52.0	90.6
Poland h/	31.0	7.8	25.2	37.0	15.9	43.0	34.8	13.9	39.9	50.3 i/	27.2	54.1	44.8 j/	27.1	60.5	72.0 k/	50.3	69.9
Rumania l/	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	7.0	3.5	50.0	17.0 m/	8.5	50.0	15.0	14.0	93.3	N.A.	N.A.	N.A.
Bulgaria n/	5.3	1.2	22.6	N.A.	0.3	N.A.	4.6	0.2	4.3	5.2	0.6	11.5	4.0 o/	N.A.	N.A.	11.0 p/	6.2	56.4

a. Minimum total based on available information.

b. 151/

d. 153/

g. 156/

i. 158/

j. 159/

k. 160/ 50X1

l. Estimated unless otherwise indicated.

m. 161/ 50X1

o. 163/ 50X1

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Table 17

Communist China: Commodity Composition of Imports  
of Machinery and Transportation Equipment from the USSR a/\*  
1955-58

	Million US \$			
	1955	1956	1957	1958
Total imports of machinery and transportation equipment	229.6	304.7	271.6	318.0
Of which:				
Complete installations	141.5	217.0	209.0	166.2
Metalworking machine tools	3.0	4.9	3.5	7.8
Metalcutting machine tools	(2.1)	(4.3)	(2.9)	(7.0)
Metalforming machine tools	(0.9)	(0.6)	(0.6)	(0.8)
Power equipment	8.1	7.2	3.9	9.7
Electrotechnical equipment	5.4	3.1	3.9	3.1
Mining equipment	0.4	0.2	1.2	0.3
Oil well drilling equipment	13.2	19.2	12.8	10.9
Hoisting and conveying equipment	1.9	1.5	2.2	3.5
Equipment for the chemical industry	1.3	0.2	0.7	0.5
Equipment for the building industry	0.1	0.2	0.6	0.5
Excavators and road building equipment	3.4	4.5	3.5	5.0

\* Footnote for Table 17 follows on p. 54.

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Table 17

Communist China: Commodity Composition of Imports  
of Machinery and Transportation Equipment from the USSR <sup>a/</sup>  
1955-58  
(Continued)

	Million US \$			
	1955	1956	1957	1958
Crushing-grinding and concentrating equipment	0.1	0.3	0.2	0.2
Equipment for the light and food industries	0.3	0.1	0.3	0.2
Pump-compressor equipment	2.6	2.8	1.8	1.2
Equipment for the printing industry	Negligible	0.1	0.1	Negligible
Antifriction bearings	2.4	1.3	1.9	1.7
Instruments	1.3	1.5	1.3	0.9
Tractors and farm machinery	10.5	9.1	2.5	10.8
Railroad rolling stock	0.4	1.5	0.3	5.0
Automotive equipment	22.7	16.0	5.2	61.7
Cable and electric wire	1.1	1.2	1.3	1.5
Metallurgical equipment	2.6	1.6	0.4	0.5
Foundry equipment	Negligible	Negligible	0.1	0.3
Gas welding equipment	0.1	0.1	0.5	Negligible
Marine equipment	0.3	2.9	1.6	2.1

a. 164/

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Table 18

Communist China: Commodity Composition of Imports of Machinery and Transportation Equipment from Poland  
1955-59

Commodity	1955 <sup>a/</sup>		1956 <sup>a/</sup>		1957 <sup>b/</sup>		1958 <sup>c/</sup>		1959 <sup>d/ e/</sup>	
	Units	Value (Million US \$)	Units	Value (Million US \$)	Units	Value (Million US \$)	Units	Value (Million US \$)	Units	Value (Million US \$)
Total imports of machinery and transportation equipment <sup>f/</sup>	N.A.	13.9	N.A.	27.2	N.A.	27.1	N.A.	50.3 <sup>g/</sup>	N.A.	N.A.
Of which:										
Metalworking machine tools	28	0.5 <sup>h/</sup>	138	1.7 <sup>h/</sup>	146 <sup>i/</sup>	1.6 <sup>h/</sup>	598	2.9	N.A.	N.A.
Mining equipment	N.A.	N.A.	N.A.	0.4	N.A.	N.A.	N.A.	0.5	N.A.	N.A.
Power equipment, except electrical	N.A.	N.A.	N.A.	2.2	326 <sup>d/</sup>	3.3 <sup>d/</sup>	2,097	4.0	N.A.	N.A.
Tractors and farm machinery	1,788	N.A.	5,762	N.A.	527 <sup>i/</sup>	3.0 <sup>d/</sup>	N.A.	12.3	300	N.A.
Equipment and materials for completely equipped enterprises	N.A.	1.7	N.A.	0.9	N.A.	5.4 <sup>i/</sup>	N.A.	N.A.	N.A.	N.A.
Excavators and roadbuilding equipment	N.A.	N.A.	N.A.	N.A.	89 <sup>d/</sup>	2.8 <sup>d/</sup>	N.A.	0.6	N.A.	N.A.
Ships	7	5.6	9	10.3	5 <sup>i/</sup>	9.5 <sup>d/</sup>	N.A.	8.3	N.A.	N.A.
Locomotives	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	95	1.0	54	N.A.
Cranes	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	60	N.A.
Automotive transportation equipment	1,381	N.A.	1,243	N.A.	11 <sup>i/</sup>	N.A.	N.A.	5.6	N.A.	N.A.
Electrotechnical equipment	N.A.	N.A.	N.A.	2.3	N.A.	N.A.	N.A.	1.6	340	N.A.
Oil well drilling equipment	N.A.	0.2	N.A.	0.4	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

d. Plan.  
e. 168/  
f. 169/  
g. 170/  
h. 171/  
i. 172/

50X1

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Table 19

Communist China: Commodity Composition of Imports of Machinery and Transportation Equipment  
from the Free World <sup>a</sup>/<sub>\*</sub>  
1953-58

Commodity and Commodity Group	Thousand US \$					
	1953	1954	1955	1956	1957	1958
Machinery, other than electrical	<u>12,747</u>	<u>5,232</u>	<u>6,222</u>	<u>22,920</u>	<u>48,669</u>	<u>51,009</u>
Power generating machinery	1,026	198	178	3,068	1,769	3,239
Agricultural machinery and implements	1	0	0	381	156	833
Tractors, other than steam	0	0	0	4,517	1,702	2,973
Office machinery	2,337	206	199	661	128	77
Metalworking machinery	1,303	34	62	952	4,327	5,924
Conveying, hoisting, excavating, road construction, and mining machinery	7,475	736	223	1,939	26,247	4,594
Paper mill, pulp mill, and paper processing machinery	0	46	2,883	348	1,439	1,234
Textile machinery and accessories	0	1,508	1,156	4,704	3,312	4,468
Sewing machines	0	0	160	144	141	247
Antifriction bearings	6	44	83	166	2,589	12,472
Other and unspecified mining, construction, and industrial machinery	0	2,404	616	5,011	5,771	12,821
Unspecified nonelectric machinery	599	56	662	1,029	1,088	2,127
Electrical machinery and appliances	<u>7,358</u>	<u>3,124</u>	<u>2,695</u>	<u>6,565</u>	<u>9,905</u>	<u>11,871</u>
Electric generators, alternators, motors, converters, transformers, and switchgear	N.A.	353	238	814	4,526	3,586

\* Footnote for Table 19 follows on p. 57.

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Table 19

Communist China: Commodity Composition of Imports of Machinery and Transportation Equipment  
from the Free World a/  
1953-58  
(Continued)

	Thousand US \$					
Commodity and Commodity Group	1953	1954	1955	1956	1957	1958
Electrical machinery and appliances (Continued)						
Radio and other apparatus for telegraphy, telephony, television, and radar	N.A.	0	253	895	1,281	1,170
Insulated cables and wire	N.A.	25	214	134	408	1,163
Other and unspecified electrical machinery	N.A.	2,746	1,990	4,722	3,690	5,952
Transportation equipment	<u>446</u>	<u>4,270</u>	<u>4,815</u>	<u>12,016</u>	<u>7,183</u>	<u>6,818</u>
Railroad vehicles	0	0	61	60	130	150
Road motor vehicles	282	324	343	7,625	4,302	5,440
Road vehicles, other than motor vehicles	164	342	357	2,948	1,387	767
Ships and boats	0	3,600	4,024	1,294	1,294	451
Unspecified transportation equipment	0	4	30	89	70	10
Unspecified machinery and transportation equipment	<u>342</u>	<u>683</u>	<u>1,303</u>	<u>54</u>	<u>0</u>	<u>0</u>
Total imports of machinery and transportation equipment	<u>20,893</u>	<u>13,309</u>	<u>15,035</u>	<u>41,555</u>	<u>65,757</u>	<u>69,698</u>

a. 173/. Instruments and a few other minor items are included in the Soviet and probably the Satellite definition of machinery and transportation equipment but are classified otherwise for the Free World.

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Table 20

Communist China: Major Imports of Machinery and Transportation Equipment  
from Selected Countries and Areas of the Free World a/  
1955-57

	Thousand US \$									
	<u>Sweden</u>	<u>Japan</u>	<u>West Germany</u>	<u>France</u>	<u>Switzerland</u>	<u>Finland</u>	<u>UK</u>	<u>Belgium- Luxembourg</u>	<u>Hong Kong</u>	<u>Austria</u>
Power generating machinery, except electrical	1,281	352	399	0	1,807	0	65	0	0	0
Tractors, other than steam	0	0	1,949	2,554	0	0	303	0	0	0
Office machinery	807	489	120	0	152	0	0	0	179	0
Metalworking machinery	0	147	1,394	622	1,348	0	342	0	29	659
Conveying, hoisting, excavating, road construction, and mining machinery	23,518	1,191	1,558	4,199	659	0	132	0	84	345
Paper mill, pulp mill, and paper processing machinery	0	0	130	0	253	3,730	92	0	126	0
Textile machinery and acces- sories	0	7,401	746	0	156	0	634	333	258	0
Antifriction bearings	0	1,944	0	0	280	0	0	0	0	0
Air conditioning and refrigera- tion equipment	0	0	0	0	338	0	0	0	81	0
Printing industry machinery	0	296	324	0	377	0	89	0	37	0
Electrical machinery and appliances	892	3,198	2,502	262	3,256	0	2,142	4,664	712	498
Transportation equipment	0	3,962	2,297	4,504	199	6,581	568	0	1,525	959
All other machinery	1,487	2,851	2,170	170	3,280	1,248	2,672	745	326	274
Total imports of machinery and transportation equipment	<u>27,985</u>	<u>21,831</u>	<u>13,589</u>	<u>12,311</u>	<u>12,105</u>	<u>11,559</u>	<u>7,039</u>	<u>5,742</u>	<u>3,357</u>	<u>2,735</u>

a. 174/

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