BY THE COMPTROLLER GENERAL

Report To The Chairman, Committee On Labor And Human Resources United States Senate

OF THE UNITED STATES

International Trade And Export Policies In The Ferrous Scrap Market

Ferrous scrap, one of the principal raw materials used in steelmaking, is significant in international trade. GAO found that:

--Scrap is traded in a highly competitive spot market, with prices determined on the basis of supply and demand.

--Unlike North America, European and Far East areas are net importers of ferrous scrap. Continuation of recently initiated liberal trade practices by major scrap exporting countries in Europe could help meet the demand of scrap deficit countries. Nevertheless, net importers in Europe and the Far East will need to continue to buy scrap from the United States.

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

B-197807

The Honorable Harrison A. Williams, Jr.
Chairman, Committee on Labor and
Human Resources
United States Senate

Dear Mr. Chairman:

In response to your request of July 11, 1979, we reviewed some of the aspects of international trade in ferrous scrap and the scrap export policies of major industrial countries.

Oral comments were obtained from the Departments of Commerce and State and the Office of the U.S. Trade Representative and were considered in the report.

As arranged with your office, this report will not be released for 7 days from the date of publication unless you publicly release its contents before then.

Sincerely yours,

Milton J. Socolar

Acting Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE COMMITTEE
ON LABOR AND HUMAN RESOURCES
UNITED STATES SENATE

INTERNATIONAL TRADE AND EXPORT POLICIES IN THE FERROUS SCRAP MARKET

D I G E S T

The United States is the world's largest producer, consumer, and exporter of ferrous scrap, one of the principal raw materials used in steelmaking.

GAO examined some of the international aspects of the ferrous scrap issue--the interaction of U.S. domestic and overseas scrap markets and the export policies of the United States and other scrap producing and consuming nations.

Scrap is traded internationally in a market dominated by the world's major steel producers, the United States, Japan, and the countries of Western Europe. GAO observed that:

--The United States, as the major scrap supplier, has and will continue to play a major role in worldwide ferrous scrap trade. Certain countries, such as Japan and Korea, buy large quantities of U.S. scrap; in Europe, other suppliers are available, but the United States is an important supplier of scrap to such countries as Italy and Spain.

--The international scrap market is essentially a spot market; buyers and sellers prefer short-term contracts. Trade is conducted in a similar manner in various markets, including the U.S. market.

--Demand for scrap, both foreign and domestic, contributes to fluctuations in U.S. domestic scrap prices.

--Scrap prices in various markets throughout the world demonstrate similar fluctuations and are esentially governed by supply and demand.

The U.S. domestic market

In the United States, buyers and sellers deal for scrap in a highly competitive spot market. There is no formal trading system, and buyers and sellers deal for scrap on a daily, verbal basis. Buyers depend on a network of brokers for current word-of-mouth information on market prices and trends. The result is an open and complex marketplace in which demand governs price and price swings occur frequently. Factors that influence either supply or demand, such as the level of steel production, a severe winter that disrupts normal transportation, or an increase in exports, will affect the price that consumers pay.

The U.S. export market

Japan, Korea, Spain, and Italy are major importers of scrap from the United States. A fairly small number of export firms--15 to 20--handle the bulk of export sales. Export prices, although higher, tend to reflect the same trends as domestic prices. Most contracts are on a spot basis, with 60 to 90-day shipping terms. U.S. exporters deal primarily with foreign steel mill customers, with one major exception--trade with Japan is usually conducted through Japanese trading companies. These trading companies compete in the U.S. market with American and foreign buyers and with other Japanese trading firms. The trading companies act essentially as purchasing agents for various Japanese steel mills and handle insurance, banking, and shipping arrangements.

The domestic ferrous scrap markets in Japan, Korea, Italy, and Spain and their import practices are described in chapter 2.

EXPORT POLICIES OF OTHER INDUSTRIAL COUNTRIES

Unlike North America, the European and Far East areas are net importers of ferrous scrap. Within the European area, export control policies of individual countries and the European Economic Community have until recently

impeded trade in ferrous scrap, but currently exporting countries generally have no major barriers to a competitive market in ferrous scrap. Continuation of unrestricted trade of ferrous scrap by such countries as France, the United Kingdom, and West Germany could generate additional scrap supplies within those countries and contribute to meeting demand for scrap by other countries. Nevertheless, net importers in Europe and the Far East will need to continue to buy scrap from the United States. (See ch. 3.)

AGENCY COMMENTS

Oral comments were obtained from officials of the Departments of Commerce and State and the Office of the U.S. Trade Representative who generally had no problem with the material presented in this report.

Contents

		Page
DIGEST		i
CHAPTER		
1	INTRODUCTION	1
	The commodity	1
	The historical debate	2
	The role of the U.S. Government	3
	Scope of review	6
2	WORLD TRADE IN FERROUS SCRAP	7
	Trade flows	7
	Characteristics of the market	9
	The U.S. scrap market	10
	Scrap markets in the Far East: Japan and Korea	13
	Japan	14
	Korea	20
	Scrap markets in Europe: Spain and Italy	22
	Italy	23
	Spain	25
3	FERROUS SCRAP EXPORT POLICIES OF OTHER INDUSTRIAL COUNTRIES	28
	European Economic Community	28
	Far East	33
	International review of measures affecting trade	34
APPENDIX		
I	Bibliography of selected ferrous scrap studies	35
GLOSSARY		38

ABBREVIATIONS

BOF	Basic oxygen furnace
C and F	Cost and freight
cif	Cost, insurance, and freight
EEC	European Economic Community
fob	Free on board
GAO	General Accounting Office
MITI	Ministry of International Trade and Industry

CHAPTER 1

INTRODUCTION

Iron and steel (ferrous) scrap's chief significance as a commodity is its use as a raw material in the production of steel. Steel mills absorb more than 75 percent of all scrap consumed in the United States; 1/ in 1978 alone, steel mills consumed 76 million net tons of scrap in the production of nearly 137 million net tons of raw steel.

This dependence on ferrous scrap, coupled with sizable and growing exports of U.S. scrap to other major steel producers, has focused attention of late on the possibility of ferrous scrap shortages and the appropriate role of the U.S. Government in ensuring sufficient supplies to meet domestic needs.

This report, prepared at the request of the Senate Committee on Labor and Human Resources, discusses operations of the international ferrous scrap market and the ferrous scrap export policies of other industrial countries.

THE COMMODITY

Ferrous scrap represents both a recycled product and a raw material, depending on how one views it as a resource. Scrap can surface as a byproduct of steel production or as a steel product that has outlived its usefulness; in either case, its content allows it to be used as a raw material in the production of new steel.

There are three general source classifications of ferrous scrap: home (or "revert"), prompt industrial, and obsolete. Home scrap originates in the steel mill itself as the cuttings, spills, etc. caused in the pressing of steel into various shapes. Prompt industrial scrap consists of discarded steel fragments generated from the manufacture of steel products, such as automobiles. Obsolete scrap represents those ferrous products that have entered the economy, exhausted their useful life, and been discarded--the classic example would be a junked car. In the United States, home scrap comprises roughly half of total scrap consumption, and obsolete and prompt industrial scrap together the other half.

1/ Steel casting producers, iron foundries, and others account for the remainder.

There are also various grades of scrap. The designations denote the quality of scrap and in the United States include No. 1 heavy melting steel, shredded, and dealer and industrial bundles. No. 1 heavy melt serves as the benchmark for the trade and is a popular export grade, as is shredded scrap.

Steel: the consumer

Steelmaking involves the use of three basic furnaces--the open hearth, the basic oxygen (BOF), and electric. In all three furnaces, ferrous scrap is used as a raw material in steel production but the proportion of scrap required varies. The electric furnaces are far more dependent on scrap, using virtually a 100-percent charge of scrap; the BOF generally is restricted to a maximum 30-percent scrap input. The open hearth remains a flexible consumer of scrap and can adjust to a wide range of scrap content in the charge.

The quantity of scrap actually consumed by each furnace type, however, is also a function of the amount of steel produced. Open hearth production has been steadily declining since the 1960s, and in 1978 accounted for only 16 percent of all raw steel produced. In contrast, BOF and electric furnaces have expanded production to 61 percent and 23 percent, respectively, of total 1978 production.

THE HISTORICAL DEBATE

The U.S. steel and scrap industries have what might be called an interdependent relationship when it comes to scrap--one needs it as a raw material and the other exists to provide it. Nonetheless, their perceptions differ markedly on certain issues, particularly scrap supply and availability.

The U.S. steel industry, particularly those elements of it almost wholly dependent on scrap, has been increasingly concerned over the possibility of scrap shortages. As a result, the industry has viewed with apprehension the rising level of exports and the cost of scrap on the domestic market. The industry's concern manifested itself in a 1979 appeal, ultimately unsuccessful, for the imposition of export controls.

The U.S. scrap industry, on the other hand, believes that supplies have been and will continue to be sufficient to meet both domestic and export demand. In its view, the continued free flow of exports provides for disposal of scrap from surplus areas, supports the concept of free trade, and contributes to the U.S. trade balance.

Availability

Whether the United States faces a scrap shortage in the near future is one of the key questions taxing scrap analysts. Any serious examination of that issue would at the least require consideration of scrap consumption rates, future foreign and domestic steel production estimates, rates of electric furnace production, and any technological advances in steel production that could affect scrap consumption. The number of variables involved makes it extremely difficult to arrive at a meaningful conclusion on the scrap availability question, and it is improbable that a consensus will be achieved.

We did not examine nor attempt to reach any conclusions on this issue. We did, however, note the existence of a number of studies on this subject that have contributed to the debate.

The literature base

Recent studies concerning the future availability of ferrous scrap generally discuss various technological and economic factors believed to affect future supply and demand. These studies differ most particularly over how optimistic it is possible to be in projecting future scrap supplies. To provide an illustration, one of the studies estimates that by 1982 U.S. scrap supplies will be insufficient to meet predicted demand. In contrast, another study postulates that a scrap reservoir in excess of 670 million tons is potentially available to meet future demand. For a more detailed description of some of these studies, see appendix I.

THE ROLE OF THE U.S. GOVERNMENT

The Export Administration Act of 1979 (Public Law 96-72, Sept. 29, 1979, 93 Stat. 503) affirms that it is U.S. Government policy "to encourage trade with all countries with which the United States has diplomatic or trading relations, except those countries with which such trade has been determined by the President to be against the national interest." Given this framework, there are specified circumstances under which export controls may be instituted. Such controls, for example, may be used:

> "to restrict the export of goods where necessary to protect the domestic economy from the excessive drain of scarce materials and to reduce the serious inflationary impact of foreign demand."

The law further provides that monitoring 1/ of exports and future export orders shall be instituted for any commodity

> "when the volume of such exports in relation to domestic supply contributes, or may contribute, to an increase in domestic prices or a domestic shortage, and such price increase or shortage has, or may have, a serious adverse impact on the economy or any sector thereof."

Commerce Department responsibilities

The Commerce Department has been given the responsibility for monitoring and, if necessary, controlling exports of various commodities. In the case of ferrous scrap, Commerce routinely gathers data and price statistics in an attempt to remain cognizant of scrap market conditions and trends. The ultimate responsibility for control and monitoring decisions rests with Commerce, but in making those decisions it consults widely with other Government agencies and interested industry representatives.

Commerce officials explained that they rely on a number of sources to obtain data, including the Bureau of the Census for trade statistics and trade publications for market and pricing information. Commerce also holds meetings with industry representatives, conducts telephone surveys, and may initiate telegraphic inquiries to U.S. Embassies abroad to track overseas supply and demand.

In addition, Commerce is now also receiving some scrap shipment and order data from scrap exporters. In March 1979, about 16 major exporters voluntarily agreed to provide weekly reports of shipments and orders to a public accounting firm. The accounting firm totals the gross tonnage data and submits it in aggregate form to Commerce each week.

Commerce officials have affirmed that they believe the sum total of the information available to them is adequate to ensure effective observation and surveillance of the scrap market.

1/ Monitoring means that exporters are required to provide the Commerce Department with periodic reports of shipments, forward bookings, and average export prices.

Monitoring and control decisions

On two specific occasions--July 1973 and March 1979--Commerce ruled on the question of instituting controls on exports of ferrous scrap. In 1973, monitoring and then controls were established and maintained until the beginning of 1975. In 1979, it was determined that neither controls nor formal monitoring of exports was necessary.

A number of diverse factors can enter into control determinations. Commerce must, in effect, assess the scarcity of scrap, together with the extent of foreign demand and its inflationary impact on the U.S. domestic economy. That assessment may include weighing such factors as export levels, price trends, the general state of the economy, steel production levels, steel mill inventory levels, technological advances in steelmaking, and foreign trade considerations.

Commerce officials emphasize that two things in particular should be kept in mind when analyzing control decisions. First, no single factor is determinative in a decision, but the existence of sustained trends--in price or export levels, for example--would be considered a key element. Second, each ruling is made under distinct circumstances, with different factors being emphasized.

The newest procedures

The Export Administration Act of 1979, approved September 29, 1979, established for the first time a formal, public petition and hearing procedure available to industry or union groups seeking controls or monitoring of recyclable metallic materials, including ferrous scrap. The law outlines the types of information to be provided by the petitioner and specifies the timing of decisions to be made by Commerce in response to such requests.

On March 26, 1980, Commerce received a petition, as provided for under the new procedures, from the Ferrous Scrap Consumers' Coalition of Washington, D.C., requesting that exports of ferrous scrap be monitored. On April 10, 1980, Commerce received a second petition, also requesting such monitoring, from the Labor-Management Committee for Fair Foreign Competition of Palm Desert, California. Both petitions requested public hearings. Commerce consolidated the two petitions, and in May 1980 proceedings were in process on the requests. Commerce has until July 10, 1980, to reach a decision concerning the petitions.

SCOPE OF REVIEW

Published information describing the ferrous scrap market is limited. To get an understanding of buying and selling practices, how price is established, and the competitiveness of the market, we interviewed U.S. and foreign government officials, market specialists, domestic and foreign steel company officials, scrap dealers and exporters, and trade associations. Domestically, our work was done in Washington, D.C., and various other locations throughout the United States. Overseas, our work was done primarily in Japan, Korea, Italy, and Spain. We selected these countries because they are large net importers of ferrous scrap and purchase substantial quantities of scrap from the United States.

To determine the ferrous scrap export policies of other industrial countries, we reviewed available reports on the subject. Also, we held discussions with the Office of the U.S. Trade Representative in Washington, D.C., and with foreign government and industry officials in the United Kingdom and France. These countries were selected because they are net exporters of scrap. We obtained information from officials of the European Economic Community in Belgium and the Organization for Economic Cooperation and Development in France concerning the scrap export policies of these organizations and/or member countries.

We discussed this work with State Department officials in Washington, D.C., and obtained information from U.S. Embassy officials in all the countries we visited. In addition, we interviewed and obtained statistical information on the ferrous scrap market from officials of the International Iron and Steel Institute in Belgium.

Oral comments were obtained from officials of the Departments of Commerce and State and the Office of the U.S. Trade Representative who generally had no problem with the material presented in this report. These comments were of a technical and clarifying nature, and we made such revisions in the report as we deemed appropriate.

CHAPTER 2

WORLD TRADE IN FERROUS SCRAP

Ferrous scrap is traded internationally in a market dominated by the world's major steel producers, among them the United States, Japan, and the countries of Western Europe. In 1977, those areas of the world consumed over 175 million net tons of scrap.

The market today lends itself to some general observations.

--Ferrous scrap is readily transportable by ship and usable as a steelmaking ingredient regardless of origin; both factors encourage world trade.

--The United States, as the major scrap supplier, will continue to play a major role in the world ferrous scrap trade. Certain countries, such as Japan and Korea, buy large quantities of U.S. scrap; in Europe, other suppliers are available, but the United States is an important supplier of scrap to such countries as Italy and Spain.

--The international scrap market is essentially a spot market; buyers and sellers prefer short-term contracts. Trade is conducted in a similar manner in various markets, including the U.S. market.

--Demand for scrap, both foreign and domestic, contributes to fluctuations in U.S. domestic scrap prices.

--Scrap prices in various markets throughout the world demonstrate similar fluctuations and are governed by supply and demand.

TRADE FLOWS

The United States is the world's largest scrap exporter, supplying major tonnages annually to both the Far East and European markets. Total U.S. exports, which dropped in 1976 and 1977 as a reflection of the slump in steel production, climbed to 9 million net tons in 1978 and to over 11 million net tons in 1979. (See table 1.)

Table 1

U.S. Exports of Ferrous Scrap
by Country
1970-79

Year	Canada	Italy	Japan	Mexico	South Korea	Spain	Taiwan	Other	Total
	(000 net tons)								
1970	711	494	5,223	855	853	1,159	151	919	10,365
1971	889	589	1,749	583	406	610	432	998	6,256
1972	905	717	2,326	621	453	726	439	1,196	7,383
1973	812	356	4,682	1,052	858	1,128	820	1,548	11,256
1974	946	484	2,980	937	762	896	546	1,143	8,694
1975	877	613	2,404	1,309	791	1,726	304	1,585	9,609
1976	890	724	1,257	595	955	1,868	305	a 1,526	8,120
1977	523	208	1,044	343	1,540	788	446	b 1,283	6,175
1978	795	656	3,190	450	1,503	744	394	c 1,306	9,038
1979	861	1,186	2,922	814	1,418	1,400	634	d 1,819	11,054
Total	8,209	6,027	27,777	7,559	9,539	11,045	4,471	13,323	87,950

a Includes 515,000 net tons to United Kingdom.
b Includes 300,000 net tons to Greece and 325,000 net tons to Turkey.
c Includes 340,000 net tons to Greece and 258,000 net tons to Turkey.
d Includes 500,000 net tons to Greece and 242,000 net tons to Turkey.

Source: Commerce Department

The primary recipients of U.S. scrap have remained a relatively stable group. Throughout the 1970s, Japan, Korea, Spain, and Italy alone accounted for close to two-thirds of all U.S. exports. 1/ Japan and Korea particularly depend on U.S. supplies; in 1978, over three-fourths of their total imports came from the United States.

1/ U.S. exports to Canada are also significant, but are largely offset by Canadian exports to U.S. markets. In 1979, the United States exported 861,000 net tons to Canada while importing an estimated 684,000 net tons.

The other suppliers

Other ferrous scrap producing countries supply export tonnages which help balance world demand. Japan augments its U.S. imports with purchases from both Australia and the Soviet Union, while Italy and Spain rely to a considerable extent on the European Economic Community (EEC). 1/ The leading suppliers within the EEC are France, West Germany, and the United Kingdom, which in 1978 registered combined exports of over 7-1/2 million metric tons; much of that scrap was, however, traded within the EEC, with Italy a major recipient. Spain has also traditionally relied on imports from both the United Kingdom and France.

CHARACTERISTICS OF THE MARKET

Trade in ferrous scrap is conducted in a manner relatively uniform throughout the world and in many ways reflects the trading practices of the major participants, including the United States, Japan, the United Kingdom, Italy, and Spain. Trade in scrap is ultimately dependent on the level of steel production, and the trade itself consequently reflects fluctuations in production levels. Long-term contracts are by far the exception rather than the rule; most traders prefer short-term commitments and, as a result, scrap is traded in a spot market.

Scrap prices in various markets throughout the world demonstrate similar fluctuations and are essentially governed by supply and demand. In scrap-deficit countries--such as Italy and Japan--demand for scrap exceeds available domestic supplies, causing buyers to seek import scrap when domestic scrap prices make imports price advantageous. An Italian buyer, for example, may purchase competitively priced scrap on the U.S. market (taking into consideration price and quality, shipping costs, and exchange rates), which moderates demand (and prices) in other markets. As U.S. prices-affected by combined domestic and foreign demand--rise, that buyer may shift its purchases to the French market, thus exerting pressure on French prices.

1/ Includes Belgium, Denmark, France, Ireland, Italy, Luxembourg, the Netherlands, United Kingdom, and West Germany.

THE U.S. SCRAP MARKET

The U.S. market is highly competitive, free, and volatile, with neither a formal trading system nor any external regulation of trade. Buyers and sellers deal for scrap on a daily, verbal basis and must in effect "hook in" to a network of brokers for current, word-of-mouth information on market prices and trends. The result is an open and complex marketplace in which demand governs price and price swings occur frequently.

Scrap consumers

The U.S. steel industry accounts for the lion's share of all scrap consumed in the United States, using 76 million net tons in 1978 in the production of nearly 137 million net tons of raw steel. Most of the steel is produced in either the basic oxygen furnace or the electric arc furnace, which in 1978 yielded 61 percent and 23 percent, respectively, of total production. 1/

Both furnaces consume scrap, although in widely divergent percentages. The integrated steelmakers, who use coke ovens, blast furnaces, and the BOF in raw steel production, require coal, iron ore, and scrap. The BOF itself is charged with a combination of pig iron and scrap, which in the United States averages out to a ratio of roughly 70 percent pig iron/30 percent scrap. In tonnage terms, the BOFs absorbed approximately 26.7 million net tons of scrap in 1978.

By contrast, the electric furnace steel producers rely almost exclusively on scrap. An electric furnace can use virtually 100 percent scrap. As a result, although the electric furnaces accounted for only 23 percent of total steel production in 1978, they consumed more scrap than their BOF counterparts, using roughly 32 million net tons.

This comparison of scrap consumption by furnace type--26.7 million tons for the BOFs versus 32 million tons for the electrics--does not in and of itself explain the relative involvement of integrated and electric furnace mill producers in the domestic scrap market. Not surprisingly, the electric mills are active participants in the market, since their dependence on scrap requires them to make frequent purchases.

1/ The open hearth furnace accounted for the remainder.

The integrated producers are relatively less dependent on market purchases than their consumption figures might suggest. The key factor is the availability of home scrap. The BOFs, in fact, can generate more than enough home scrap to fuel subsequent production, a circumstance that prompted some integrated producers to build their own electric furnaces to absorb the excess scrap. Today, integrated mills do participate in the domestic market, but they are less dependent on that market because of the operation of their BOFs.

Scrap traders

Scrap trade in the United States is essentially represented by a pyramid of scrap collectors, processors, dealers, and brokers. These traders deal in purchased scrap, i.e., obsolete and prompt industrial scrap; home scrap is for all intents and purposes recycled within a given mill and does not enter the domestic market.

At the bottom of this pyramid, collectors, both small and large-scale enterprises, gather scrap for delivery to the processors who crush, mold or otherwise shape the material into bulk quantities for subsequent sale. It is the larger scale dealers and brokers who ultimately market the scrap to the steel mill consumers and are paid a standard commission for their sales services. Many of these functions may be combined in a single entity, often referred to as a dealer/broker, who processes scrap on a large scale, maintains a number of scrapyards, carries large inventories, and trades on a broad scale.

The marketplace

Geographics play a large role in the U.S. scrap trade; the major locations of steel production, principal areas of scrap generation, and expense involved in transporting scrap long distances all contribute to the logistics of the trade. In a real sense, scrap is traded in a number of distinct submarkets, chiefly the Pittsburgh, Chicago, and Philadelphia areas.

Within these markets, however, trade is conducted in a similar manner, and certain characteristics distinguish the trade. Buyers for the various mills keep in contact with a number of brokers and make purchases based on calculations of steel production levels and the status of inventories. Although various mills have established relationships with certain brokers and some have an understanding regarding supply arrangements, long-term contracts are generally not characteristic of the market. On the contrary, the volatility of the market tends to discourage either mills or dealers from engaging in longer than 30-day commitments.

Purchases do follow some patterns. According to various mill representatives, orders are placed with a number of brokers on a monthly basis. In the Midwest, for example, mills tend to buy from dealers after major prompt industrial suppliers, such as automobile manufacturers, hold sealed-bid auctions. These orders are almost always made by phone, after a mill buyer has indicated the tonnages and price he wants and the broker/dealer has accepted or countered with another offer. Mills will generally contract for 30-day shipments and are free to cancel orders if shipment is not made within the time allotted.

There is no single strategy for buying scrap. Each buyer must watch the market, gauge price and supply trends, evaluate his own mill's needs, and purchase accordingly.

Market prices

The price of scrap on the U.S. domestic market depends on supply and demand. Factors that influence either supply or demand, such as the level of steel production, a severe winter that disrupts normal transportation, or an increase in exports, will affect the price that consumers pay.

Buying practices of the various mills and brokers also affect the market. Some market observers believe that the price volatility of the market is at least partially due to the buyers themselves, who, in a falling market, will reduce their purchases or withdraw from the market entirely, thus further encouraging a drop in prices. At some point, one of two things may happen: mills will reenter the market as their need for scrap picks up, or prices will have dropped so low that suppliers will have trouble attracting scrap from collectors and processors. Both these events result in a tightening of supplies and a consequent climb in scrap prices. Steel mill scrap consumers, however, point out that it is steel production levels that dictate scrap buys, and the cost of maintaining inventories discourages the purchase of large quantities when demand, and prices, are low.

Buyers and sellers have access to some price indicators that allow them to follow the market. Trade publications provide daily reports of prices for various grades of scrap in the major markets; these quotes are less a reflection of a particular price than an indication of market trends. Railroads announce prices paid for scrap auctioned off by sealed bid. Finally, and perhaps most importantly, the broker network provides a daily source of market fact and rumor.

The export market

In the last 2 years, the U.S. domestic market in purchased scrap outweighed the export market by a ratio of almost 5 to 1. Nevertheless, exports still represent a significant element of the trade, as reflected by the exporters gathered on the east and west coasts. Those areas, plus the gulf coast, are the main centers of the export trade and the areas where scrap has traditionally been a surplus commodity, given the costs involved in transporting coastal scrap further inland.

The west coast is a source of scrap for the Far East, with Japan, Korea, and Taiwan the major recipients. On the east coast, the Europeans compete for scrap with the Japanese, who depending on freight rates, can effectively compete for east coast scrap. The east coast is the principal export area and the west coast is second in export tonnage. The gulf coast is a much smaller export area, but is significant because of a major transportation link, the Mississippi River, which ties it to the Midwest. This can result in competition between exporters and domestic consumers for inland scrap.

The export trade itself has certain characteristics. A fairly small number of export firms--15 to 20--handle the bulk of export sales. Export prices tend to reflect the same trends as domestic prices, but they are higher because of additional costs, such as transportation charges, stevedoring costs, etc. Long-term contracts are fairly rare, although there have been some instances of such contracts. Today, however, the volatility of market prices has made it difficult to establish an equitable price formula, and most contracts are on a spot basis, with 60 to 90-day shipping terms. U.S. exporters deal primarily with foreign steel mill customers, with one major exception--trade with Japan is usually conducted through a Japanese trading company.

SCRAP MARKETS IN THE FAR EAST: JAPAN AND KOREA

Japan and Korea effectively illustrate the trade and consumption of scrap in the Far East. Japan is today the world's third largest steel producer and its total scrap consumption exceeded 39 million metric tons in 1978. In contrast, Korea is a much smaller steel producer, but is nevertheless a significant participant in the world scrap market, registering imports of 1.7 million metric tons in 1978 alone.

Japan and Korea are also major importers of U.S. scrap, with combined imports in 1979 of 4.3 million net tons, or almost 40 percent of all U.S. exports. These levels have raised questions among U.S. steel producers over the methods, timing, and possible market disruptions caused by importers in general and Japanese firms in particular.

JAPAN

Japan produced over 102 million metric tons of steel in 1978. The bulk of that tonnage was produced by Japan's integrated mills in basic oxygen furnaces, but electric furnace mills now account for over 20 percent of Japan's steel production. Ferrous scrap is almost the sole input in the production of steel in electric furnaces and also accounts for 5 to 10 percent of the charge in BOFs. 1/

Japan is able to meet most of its scrap demand domestically but has continued to import roughly 6 to 8 percent of total requirements; that alone makes it a leading scrap importer. In the past 10 years, Japan has consistently imported large scrap tonnages from the United States, and in 1978, it imported approximately one-third of all scrap exported by the United States.

The domestic scrap market

In many ways, the Japanese domestic scrap market resembles its U.S. counterpart, although there are some distinguishing characteristics; collectors, dealers, and steel mills play essentially the same roles, and competition for available supplies is fierce. Unlike the U.S. market, however, Japanese trading companies participate actively in the trade, and the steel and scrap industries as a whole have taken some small cooperative steps in an attempt to stabilize the market.

Steel producers using electric furnaces--the primary participants in the scrap market--can purchase scrap directly from a processor, through a trading company, or in some instances from a Japanese integrated steel mill. The collector, at the lowest end of the scrap collection and distribution system, salvages obsolete scrap for sale to the

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1/ This charge can vary; Japanese BOFs tend to use only 5 to 10 percent scrap charge, while in the United States up to 30 percent scrap is used.

processors. The processor may sell the scrap to either a larger dealer, a trading company, or directly to the end user. According to one source, the bulk of the trade is channelled through the trading companies, who reportedly handle from 50 to 80 percent of scrap traded domestically and receive sales commissions for their services.

Finally, an electric mill's scrap supplies may be augmented by receipts from one of Japan's integrated steel mills. The integrated mills themselves generally do not need to buy scrap; whatever home scrap is generated through BOF production is recycled either in the BOFs or in the few electric furnaces operated by the integrated mills. In fact, in recent years these integrated mills have generated scrap surpluses, which they have sold, normally at market prices, to their subsidiary or affiliated electric furnace mills. Those tonnages have been fairly substantial; one large electric mill has traditionally obtained 25 percent of its scrap requirements from an integrated mill.

Establishing market prices

In Japan as well as in the United States, supply and demand govern the price of scrap, which is traded in a highly competitive spot market. Competition is further intensified by pure geographics; a number of areas have a concentrated number of dealers and mills actively engaged in trade. As a result, the Japanese market is distinctive in the actual manner in which price is finally determined. An electric mill will announce a "list price" at which it is willing to buy scrap; whether the mill actually receives any scrap depends on the supplier's decision that the announced price is a good one. As explained by one mill, general contracts (or oral agreements) are concluded with a number of dealers, and quantities and price may be stipulated. These arrangements, however, are not binding. The mill will watch daily deliveries of scrap; the arrival of insufficient quantities will lead to an increase in the announced price to attract more scrap. Conversely, the delivery of too much scrap will lead to a decrease in the offered mill price. In this manner, each mill monitors and modifies the flow of scrap to its facilities.

Domestic market interventions

In the past, integrated mills, scrap dealers, and electric furnace mills have collaborated on ways to stabilize the domestic scrap market. This consensus has led to the release of both scrap and billets (a semi-finished steel product) onto the market in an attempt to expand supplies and thereby temper price increases. To date, neither of these strategies has resulted in any sustained impact on the scrap market.

Scrap releases were handled by the Japan Steel Scrap Reserves Association, an organization established in 1975 with the stated objective of helping to stabilize the scrap market. Its membership includes trading companies, scrap dealers, and integrated and electric mills. Since 1976, the Association has purchased over 72,000 metric tons of scrap; some scrap was purchased from the United States, but most purchases were made from the Japanese integrated mills. As of early 1980, these reserves had been exhausted; at the request of the electric mills, releases of the scrap were made four times during 1978 and 1979, when it was judged that the market needed some relief.

The Association reported that the releases had some short-term effect, but the small quantities involved prevented any lasting market improvements; prices tended to again rise subsequent to the releases. Nevertheless, the Japanese remain committed to the principle of scrap releases, and the Association plans to establish large scrap yards and purchase greater quantities on the domestic market to hold in reserve.

The technique of releasing billets, which rolling mills can use to produce final steel products, was also designed to ease scrap demand. Such releases, made by integrated mills at the request of the Japanese Ministry of International Trade and Industry (MITI), have occurred twice in the last 5 years--in July 1979, 60,000 tons of billets were released and between December 1979 and January 1980, 100,000 tons. According to a MITI official, the effect of such releases was not substantial because the quantities were slight in comparison with total scrap requirements. In any case, MITI would in the future prefer not to have to intervene again.

Scrap imports

Over the last decade Japan has been a consistent importer of ferrous scrap to fuel domestic raw steel production, with most of its imports coming from the United States. In 1976 and 1977, the depressed state of the steel industry decreased Japan's need for scrap, but in 1978, Japan tripled its U.S. scrap imports over the preceding year to a level of nearly 3.2 million net tons. In 1979, imports from the United States exceeded 2.9 million net tons.

Insufficient domestic supplies of scrap provide the basic rationale for Japanese buyers to seek scrap in other markets, notably the U.S. market. There is general recognition among Japanese scrap dealers, trading companies, and electric furnace mills that Japan is in a net deficit position on scrap and must import certain quantities. Any concerted attempt to purchase all needed scrap on the domestic market would inflate the cost beyond existing import price levels.

Each mill must first determine its scrap requirements based on steel production plans. A mill's purchase strategy is influenced by inventories; in Japan, most electric mills are constrained by limited storage space and maintain very small inventories on the order of 10 days to 2 weeks. The mill must also gauge domestic supplies and then determine how much imported scrap it will buy. Imported scrap must of necessity be ordered at least 2 to 3 months ahead of scheduled consumption (instead of the usual 1 month for domestic shipments), requiring mills to balance the cost of import scrap at date of order with estimates of domestic market levels some 2 months hence.

As the graph on page 18 demonstrates, scrap imported from the United States cost less for Japanese mills than Japanese domestic scrap for the greater part of 1978, but in 1979, import scrap costs rose above domestic market prices. The 1978 cost advantage of U.S. imported scrap has been ascribed principally to the yen/dollar exchange rate; the weakness of the dollar enhanced the value of U.S. scrap and encouraged Japanese imports.

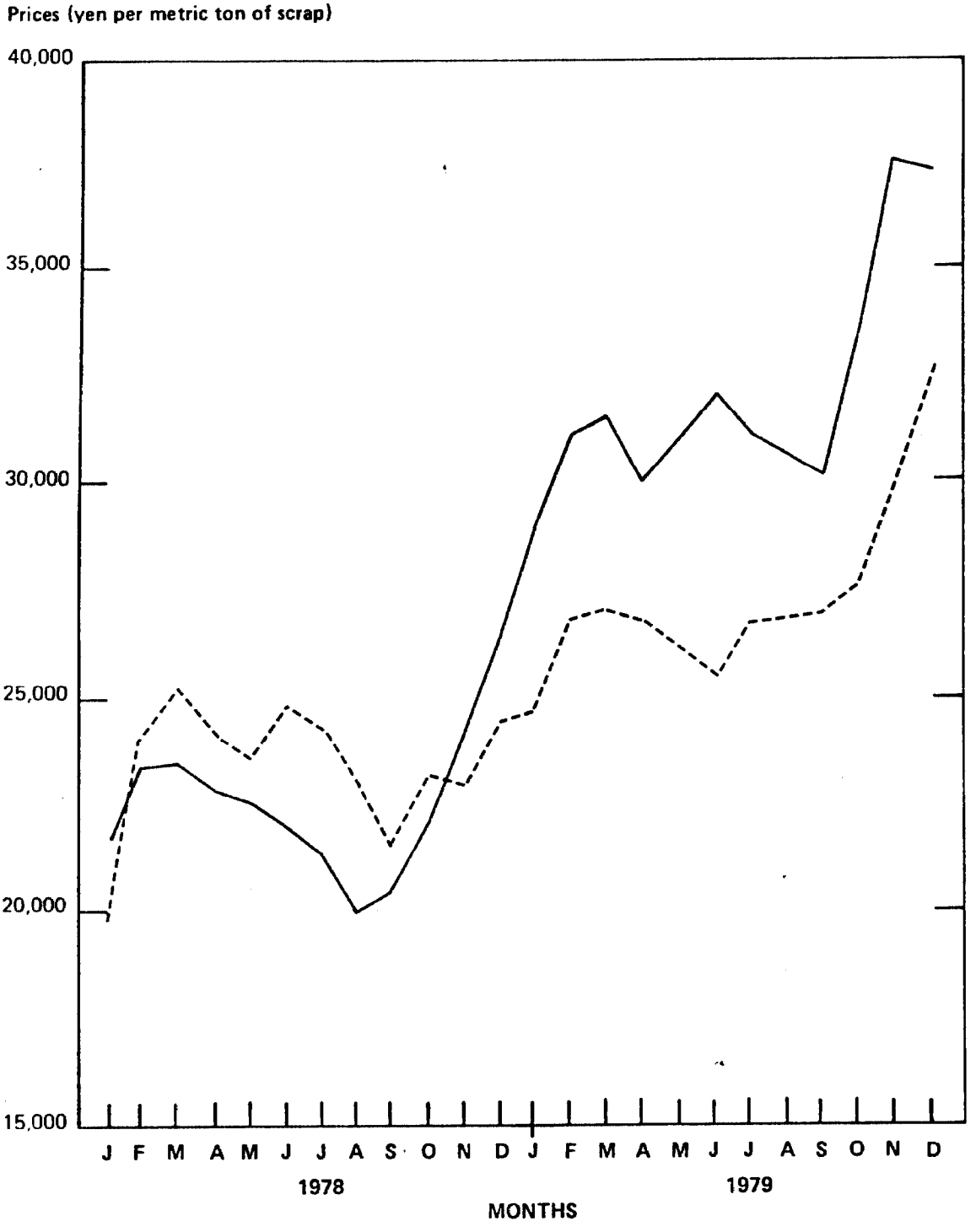
As the dollar gained in strength in 1979, U.S. scrap import prices once again climbed above Japanese scrap prices, which ultimately slowed (but did not stop) Japanese purchases from the United States by the last quarter of 1979. Nonetheless, total Japanese imports of U.S. scrap in 1979 did in fact approximate the same levels reached in 1978.

The interrelationship of Japanese domestic and U.S. scrap market prices can be illustrated by reviewing the buying practices of a given Japanese electric furnace mill. One large Japanese mill, for example, traditionally has made large purchases of U.S. scrap. By the fourth quarter of 1979, however, the price of U.S. scrap, coupled with freight rates and the yen/dollar exchange rate, had caused the mill to seek greater amounts of scrap on its own domestic market. The electric mill consequently raised its list prices to attract more domestic scrap thus placing upward pressure on Japanese domestic market prices.

The import process

Once a Japanese mill has calculated its import scrap needs, it indicates these requirements to a Japanese trading company, which enters the international market to actually make the purchases and arrange shipments. Unlike purchases made on the domestic market, contracts with U.S. exporters must be concluded stipulating price and quantity. The price to the mill is cif Japan, with either a trading company or the U.S. exporter arranging shipment.

COMPARISON OF JAPANESE DOMESTIC AND US-IMPORT SCRAP PRICES



——— Price of U.S. # 1 HMS SCRAP, C and F Japan (converted at average monthly exchange rate)

------ Japanese Tokyu grade domestic composite price (average of Tokyo, Osaka and Nagoya market prices)

The Japanese trading companies act essentially as purchasing agents for various Japanese steel mills and are better equipped to handle insurance, banking, and shipping arrangements. In practice, a trading company will attempt to arrange a number of orders with mills in order to "fill" a shipload at approximately 20,000 to 30,000 tons. Japanese trading companies explained that these arrangements are simply to facilitate shipments and save on transportation costs. 1/ These mills in fact may pay different amounts for scrap in the same shipment, depending on negotiations with the trading firm over price and timing of order.

Japanese trading companies regard the U.S. export market as a competitive spot market. The firms with whom we talked reported that long-term contracts are not practical because of scrap price fluctuations; the Japanese, like other buyers, make purchases on a monthly, short-term basis.

Continued reliance on imported scrap

Japanese electric mills, trading companies, integrated producers, and scrap dealers alike expect that Japan will have to rely on scrap imports to fulfill some percentage of demand. Estimated domestic scrap generation, steel production forecasts, releases of billets and scrap, and the possibility of using sponge iron as a scrap substitute will all influence the actual degree of dependence on imports.

Domestic scrap generation is expected to increase at an estimated 2 to 5 percent, as more and more obsolete scrap enters the market. This increased availability of obsolete scrap, however, is expected to be offset by higher steel production levels and the expanded use of continuous casting. 2/

The use of sponge iron as a substitute for scrap has attracted attention in many steel-producing countries, and Japan has also been studying the technical and economic feasi-

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1/ A number of press reports have indicated that Japanese mills do intend to band together to make bulk purchases. According to various mills and trading companies, this is not an established practice. The Japan Steel Scrap Reserves Association, however, plans to review the possibility of facilitating some sort of group purchases.

2/ A process that reduces the amount of home scrap generated in steelmaking.

bility of producing and using it. At this point, however, the general consensus is that sponge iron won't be used as a significant substitute for ferrous scrap for some 5 to 10 years.

KOREA

During the period 1975 through 1978, Korean steel production increased dramatically, with additional increases anticipated by the early 1980s. By 1978, Korean steel mills had nearly doubled 1975 production, to approximately 5 million metric tons. According to data provided by the Korean Ministry of Commerce and Industry, total Korean steel production is expected to reach 13.7 million metric tons by 1984.

In the past, Korea has relied heavily on both the basic oxygen and electric furnaces for the production of steel, but the BOF now accounts for a larger percentage of total production, as demonstrated below.

Crude Steel Production
(000 metric tons)

Year	BOF	Percent	Electric	Percent	Total (note a)
(actual)					
1975	1,268	50.0	1,184	46.7	2,534
1976	2,140	60.9	1,321	37.6	3,511
1977	2,530	58.2	1,718	39.5	4,347
1978	2,838	57.1	2,023	40.7	4,969
(estimated)					
1979	5,300	69.7	2,200	28.9	7,600
1980	5,500	67.1	2,600	31.7	8,200
1981	6,600	68.7	2,900	30.2	9,600
1982	9,600	74.4	3,200	24.8	12,900
1983	8,800	71.0	3,500	28.2	12,400
1984	9,800	71.5	3,800	27.7	13,700

a/ Includes small amount of steel produced in open hearth furnaces.

Source: Korean Ministry of Commerce and Industry.

The Korean steel industry consists of one major BOF producer and a number of electric mill furnaces; it is the electric furnaces which require purchased scrap and which compete on both the domestic and export markets.

Scrap purchases

Korea's expanding steel production, relatively high dependence on electric furnaces, and position as a newly industrializing country make for a high dependence on ferrous scrap imports to fuel steel production. Korea relies on the electric furnace to a comparatively higher degree (40.7 percent) than other major steel producers, such as the United States (23.3 percent of production in 1978), Japan (21.9 percent), Germany (14.4 percent) and France (15.1 percent). 1/ Korea, moreover, does not yet have the domestic supplies of obsolete scrap entering the economy that other countries, with a longer history of industrialization, can draw upon.

The net result has been a high level of imports in general and a heavy reliance on U.S. imports in particular. In 1978 Korea satisfied 60 percent of scrap requirements through imports, which reached 1.7 million metric tons, 76 percent of it from the United States. Only two other countries supply statistically significant tonnages to Korea; in 1978 Australia and Japan accounted for 14 percent and 7 percent, respectively, of Korean scrap imports.

Korea believes that economics and availability together explain its historical reliance on imports of scrap from the United States. It is unlikely that either Australia or Japan would provide much greater quantities; Australia's generation of obsolete scrap is too low to warrant optimism about future increases in available supplies, while Japan remains a net scrap importer. The scrap Korea has bought from Japan consists principally of poor quality grades that are used by rerolling mills, not the electric furnaces. Finally, even if Korea had access to the EEC markets, ocean freight and length of voyage considerations would make European shipments of scrap prohibitive in cost.

1/ There are of course other countries who equal or surpass Korea's percentage of steel production by electric furnace, notably Spain (42.3 percent in 1978) and Italy (50.6 percent).

In making U.S. scrap purchases, most Korean mills do their own buying, and four electric mills tend to dominate the trade. According to the Korean Ministry of Commerce and Industry, approximately 80 percent of all scrap transactions are negotiated by the steel mills themselves, and Korean and Japanese trading companies handle the remainder. Four mills alone purchased over two-thirds of all U.S. scrap imported in 1978. The Ministry noted that each mill makes its own purchases; some pooling of purchases was attempted some time ago but was unsuccessful because of problems in distributing the scrap as well as difficulties caused by fluctuations in price.

The Ministry has indicated that scrap is normally purchased on a short-term, 90-day contract basis, because U.S. suppliers generally are not interested in concluding long-term contracts. The Koreans, however, appear to be less reluctant to consider such arrangements. One major steel mill in fact already has one such contract with a U.S. firm for the supply of 200,000 tons annually (with prices determined 1 month prior to each shipment) and is considering the possibility of concluding another 5-year contract with a second supplier. This mill is heavily dependent on imports--in 1979 imports represented 78 percent of its scrap requirements--and has consequently placed great importance on stable supplies of scrap at stable prices.

SCRAP MARKETS IN EUROPE: SPAIN AND ITALY

As major European importers of ferrous scrap, Spain and Italy are good illustrations of how scrap is traded in a European context. At the same time, these two steel producers can be distinguished in one important way--participation in the European Economic Community. Italy is a member of the EEC and has had free access to scrap from other member states. Spain is not a member and, although it has not had completely free access to the EEC markets, it obtains substantial quantities of scrap from EEC members. 1/ Both Italy and Spain also import large tonnages of scrap from the United States.

1/ See ch. 3 for a discussion of current EEC policy on ferrous scrap trade outside the Community.

ITALY

Within the EEC, Italy is second only to the Federal Republic of Germany in the production of crude steel, and Italian steel production exceeded 24 million metric tons in 1978. In producing steel, Italy relies almost equally on the BOF and electric furnaces, as the following chart demonstrates.

Italian Production of Steel by Process
1974-1979
(000 metric tons)

YEAR	OPEN HEARTH	PERCENT	ELECTRIC	PERCENT	BOF	PERCENT	OTHERS	TOTAL
1974	3,510.9	14.7	9,860.2	41.4	10,423.8	43.8	7.7	23,802.6
1975	2,456.3	11.2	9,381.5	43.0	9,990.8	45.8	7.7	21,836.3
1976	1,955.7	8.3	10,818.6	46.1	10,664.4	45.5	7.9	23,446.6
1977	1,582.1	6.8	11,291.5	48.4	10,451.7	44.8	8.5	23,333.8
1978	1,510.1	6.2	12,298.9	50.6	10,465.4	43.1	8.4	24,282.8
1979 (Jan. to Sept.)	843.4	4.8	9,253.3	52.4	7,552.4	42.8	5.9	17,655.0

Source: Campsider SPA, Italy.

Italy's relatively high dependence on the electric furnace translates into a large rate of scrap consumption industrywide. Over the last 5 years, scrap consumption has been increasing as has the percent of that scrap used in the electric furnaces.

Italian Scrap Consumption by Process
1974-1979
(Steel works only)
(000 metric tons)

YEAR	OPEN HEARTH	PERCENT	ELECTRIC	PERCENT	BOF	PERCENT	TOTAL (note a)
1974	1,752.8	12.0	10,464.9	71.8	2,306.7	15.8	14,577.7
1975	1,066.1	7.9	10,044.0	75.1	2,228.3	16.7	13,375.3
1976	744.2	5.1	11,632.0	79.2	2,268.6	15.4	14,691.7
1977	577.3	3.9	12,213.2	82.1	2,057.1	13.8	14,883.8
1978	625.5	3.9	13,348.4	83.3	2,007.2	12.5	16,024.1
1979 (Jan. to Sept.)	298.7	2.5	9,929.1	85.1	1,412.6	12.1	11,673.1

a/ Includes some scrap used in blast furnaces.

Source: Campsider SPA, Italy.

Italy does not generate sufficient scrap to meet this rate of consumption. During the last 5 years, domestically available scrap--both home and purchased--has consistently accounted for close to two-thirds of all scrap consumed by the steel industry; the remainder has been imported.

Ferrous scrap purchases

Both Italian steel producers and scrap dealers characterize the scrap market as a free and open one. Dealers sell directly to the steel mills, and prices are charged according to supply and demand. Long-term contracts do not appear to be used; on the contrary, trade is conducted in a spot market. Electric mill buyers tend to buy from whatever sources represent the best combination of price, availability, and quality. One of the larger mills, for example, is in the market every month and may buy from French, German, U.S., or domestic suppliers; according to Italian dealers, Italian scrap prices are in fact generally comparable to world prices.

Scrap imports

Italy depends most heavily on France and Germany for its scrap imports; the two countries combined supplied Italy in 1978 with over 75 percent of total import requirements. By contrast, imports from the United States as a percentage of total imports have varied from 3.3 percent in 1977 to 9.9 percent in 1976.

Italian Scrap Imports
(000 metric tons)

Year	France	Percent	Germany	Percent	Total from EEC (note a)	Percent	United States (note b)	Percent	Total (note a)
1974	2,757	43.9	2,080	33.1	4,948	78.9	453	7.2	6,275
1975	2,281	42.1	1,739	32.1	4,249	78.5	507	9.4	5,413
1976	2,619	41.8	2,070	33.0	4,928	78.6	621	9.9	6,272
1977	2,735	46.9	1,995	34.2	4,936	84.7	191	3.3	5,825
1978	2,972	45.3	2,045	31.1	5,239	79.8	456	6.9	6,566
1979 (Jan. to Aug.)	1,814	42.3	1,320	30.8	3,232	75.3	423	9.9	4,291

a/Total figures include scrap imports from countries not listed in table.

b/Figures do not correspond with U.S. export figures on p. 8 because of metric ton conversion and other unresolved differences.

Source: Campsider SPA, Italy.

Italy consequently views the EEC as its major source of scrap, and trades in the United States and other third countries when the market makes it advantageous to do so. This can be clearly illustrated by Italian purchase levels in 1979; steel producers bought heavily in the United States, almost doubling 1978 sales to Italy. (See p. 8.) According to one source, the increase was at least partially due to the competitiveness of U.S. scrap prices and the weakness of the dollar.

SPAIN

Spain's steel industry, like Italy's, relies to a fairly high degree on production from electric furnaces. In 1978, electric furnaces accounted for 42.3 percent of all steel produced. In consequence, scrap is now and will continue to be a commodity whose continued availability is of concern to Spanish steelmakers.

The scrap marketplace

As might be expected, Spain's electric furnace mills are the major buyers in a domestic market that is estimated to yield roughly 5 million metric tons annually (2 million tons home scrap and the remainder purchased scrap). The integrated producers are by comparison far less involved in the market; the integrated mill making the largest purchases still may buy only 300,000 tons annually.

Of the scrap available domestically, perhaps half comes from shipbreaking; other sources include industrial manufacturers, railways, and miscellaneous obsolete scrap. Only small amounts of obsolete scrap have been available in Spain because of its still relatively low scrap reservoir.

Much of the scrap is sold by a processor directly to a mill. In Spain, there are approximately 15 to 20 major independent processors who together trade in roughly 80 percent of all scrap processed. These processors sell to both integrated and electric mills on a short-term, (month-to-month) contract basis.

Scrap imports

Spain has consistently augmented domestic scrap supplies through imports, although the actual tonnages bought on the international market, and particularly the sources, have varied from year to year. Nonetheless, the United States and the United Kingdom have remained important suppliers.

Spanish Scrap Imports
(000 metric tons)

Year	France	Percent	United Kingdom	Percent	Total from EEC (note a)	Percent	United States (note b)	Percent	Total (note a)
1973	148	7.4	347	17.2	697	34.6	898	44.6	2,012
1974	133	6.9	186	9.7	576	29.9	950	49.4	1,924
1975	140	6.4	217	9.9	549	25.0	1,456	66.2	2,198
1976	187	7.0	212	8.0	584	22.0	1,768	66.5	2,657
1977	271	13.6	472	23.7	955	47.9	757	38.0	1,993
1978	259	13.3	827	42.4	1,231	63.1	515	26.4	1,950

a/Total figures include scrap imports from countries not listed in table.

b/Figures do not correspond with U.S. export figures on p. 8 because of metric ton conversion and other unreconciled differences.

Source: Union de Empresas Siderurgicas, Spain.

There are a number of reasons for Spain's scrap imports. A given mill's geographic location may have a great deal to do with its buying strategy; in areas of low scrap generation and/or heavy scrap demand, mills may seek outside sources because of the high cost of overland freight. According to one exporter to the Spanish market, price alone may not always be the sole determining factor; scrap quality and availability play equally important roles. For example, the

United States is viewed as a supplier of better grade shredded scrap than other European exporters. This may be weighed against the advantages of importing at lower cost from a closer source, such as the United Kingdom.

Actual purchases are normally arranged directly between exporter and end user, with mills buying their individual requirements on a spot market basis. In the early 1970s, Spanish mills did experiment with consolidated buying, but this practice has fallen by the wayside; the mills prefer to buy independently.

CHAPTER 3

FERROUS SCRAP EXPORT POLICIES OF OTHER INDUSTRIAL COUNTRIES

Unlike North America, the European and the Far East areas are net importers of ferrous scrap. Within the European area, export control policies of individual countries and the European Economic Community have until recently impeded trade in ferrous scrap, but currently exporting countries generally have no major barriers to a competitive market in ferrous scrap. Continuation of unrestricted trade of ferrous scrap by such countries as France, West Germany, and the United Kingdom could generate additional scrap supplies within these countries and help to meet demand for scrap by other countries. Nevertheless, net importers in the European area and the Far East will need to continue to buy scrap from the United States.

EUROPEAN ECONOMIC COMMUNITY

Presently the EEC policy prohibits restrictions on exports of ferrous scrap within the Community and permits individual members to decide for themselves about exports to third countries. In dealing with third countries, the United Kingdom, France, and West Germany currently have no major barriers to scrap exports; Italy, Denmark, and Ireland have restrictive policies; and Belgium, Luxembourg, and the Netherlands have policies that are somewhere in between. With the exception of the Netherlands, which is a major scrap surplus country, the trade practices of the latter six countries have little impact on the availability of scrap in the European area.

France, the United Kingdom, West Germany, and the Netherlands generate more scrap than they need and, consequently, are net exporters of scrap, most of it to other EEC countries. From the beginning of 1977 to mid 1979, about 82 percent of EEC scrap shipments went to other Community members, as shown below.

Exporter	Importers: EEC	Other	Total
	(000 metric tons)		
France	7,277	756	8,033
United Kingdom	1,369	1,633	3,002
West Germany	2,852	a(82)	2,770
Netherlands	1,883	535	2,418
Total	13,381	2,842	16,223

The majority of the EEC ferrous scrap exports to third countries goes to Spain, as shown below for 1978.

Exporter	Spain	Other countries	Total
	(metric tons)		
United Kingdom	777,000	83,000	860,000
France	267,000	a(24,000)	243,000
Netherlands	106,000	61,000	167,000
Total	1,150,000	120,000	1,270,000

a/ Net importer from other countries.

Italy is the major steel producing country within the EEC that does not generate enough scrap to meet its own needs. As a result, it imports substantial quantities of scrap from within the EEC, the United States, and other countries as has been discussed in chapter 2.

Through 1976, the quantity of ferrous scrap generated within the EEC, although substantial, still was not sufficient to meet the members' requirements and the EEC was a net importer of almost 1 million metric tons of scrap a year. Since 1977, imports and exports to third countries have tended to be in balance.

Export policy

The EEC ferrous scrap policy has been designed to ensure that scrap generated within the Community would be available to meet the needs of the members. In 1953, the EEC Council called for a coordinated effort to restrict scrap exports to countries outside the EEC. In practice, this meant that exports to third countries were prohibited unless EEC members unanimously agreed to authorize such exports.

Initially, as this policy was implemented, no scrap exports to third countries were permitted. As the Community developed, this prohibition was relaxed and export quotas were established on a quarterly basis. In July 1977, the situation had progressed to the point where the EEC Council decided there was no need to continue setting quotas and each member could determine how much scrap it would export to non-member countries.1/

In November 1979, the Commission of the European Community proposed a new scrap export policy based on a flexible surveillance and consultation system. The proposal represents a compromise between members who favor dismantling all export controls and members who want to return to the restrictive policy adopted in 1953. It calls for each member to inform the Commission before the start of each 6-month period as to whether it will restrict exports to non-EEC countries and if so, at what levels. The Commission or member countries can request consultations concerning these plans to ensure that a sufficient supply of scrap will be available within the EEC. The new policy proposals are included in the Community's 1980 program to combat the crisis in the iron and steel industry. As of November 1979, no action had been taken on the proposals by the EEC Council of Ministers.

The scrap policies and practices of two major EEC net exporters--the United Kingdom and France--are discussed below.

United Kingdom

The United Kingdom has been a net exporter of ferrous scrap throughout the past two decades, accounting for as much as 5 percent of world scrap exports. Its exports are made almost exclusively to EEC members or to Spain.

1/ Except for the United Kingdom, we focused on export control policies commencing with July 1977.

The scrap industry has historically been subjected to export controls. According to the British Scrap Federation, from 1958 to 1973 export levels were established through consultations between the steel and scrap industries, and the export levels agreed upon kept the price of ferrous scrap in the United Kingdom below European and U.S. levels.

Exports to EEC members

Upon entering the EEC in 1973, the United Kingdom had to adopt a new export policy and the agreement between United Kingdom steel and scrap industries was terminated because it conflicted with EEC competition rules. During the transition period, which ended in December 1974, the United Kingdom Government exercised its right to control scrap exports to member countries; during this period exports of high-grade scrap (e.g., heavy steel, wrought material, and cast iron) to EEC members were prohibited and licensing arrangements or monthly quotas were in effect for low grades. 1/

Since the beginning of 1975, the United Kingdom has imposed no controls over the export of any grade of scrap to EEC members.

Exports to non-EEC members

From May 1973 through December 1976, the United Kingdom restricted exports of high-grade scrap to non-EEC countries and either completely banned or set monthly quotas for exports of low grades of scrap, as follows.

Period	Monthly quotas for low-grade scrap (metric tons)
May 1973 to Mar. 1974	No exports
Apr. 1974 to Mar. 1975	15,000
Apr. 1975 to Dec. 1976	60,000 to 80,000

1/Includes shredded material, turnings and borings, and compressed baled material.

At the beginning of 1977, the United Kingdom lifted the restrictions against exports of high-grade scrap and set monthly quotas for such exports, which were included as part of an overall quota for all grades of scrap. The following quotas were set for January through June 1977.

Period	Total monthly quotas	Monthly quotas for high-grade scrap
	(metric tons)	
Jan. to Mar. 1977	90,000	13,500
Apr. to Jun. 1977	108,000	16,200

When the EEC terminated its strict policy for control of scrap exports in July 1977, the United Kingdom removed export quotas for all grades of non-alloy ferrous scrap and adopted a liberal system for obtaining export licenses. This policy continued in effect through September 1978, at which time the United Kingdom's Department of Industry restored quotas for low and high grades of scrap to countries outside the EEC to protect the home market from a possible shortage due to an increase in world demand. The following monthly quotas were established for October 1978 through August 1979.

Period	Total monthly quotas	Monthly quotas for high-grade scrap
	(metric tons)	
Oct. to Dec. 1978	70,000	14,000
Jan. to Mar. 1979	67,500	10,000
Apr. to Jun. 1979	60,000	3,000
Jul. to Aug. 1979	60,000	3,000

Effective September 1, 1979, the Department of Industry again removed all restrictions on the export of non-alloy ferrous scrap but retained the licensing system. The controls were lifted because the demand for scrap in the United Kingdom had eased. This free export of scrap was to continue for a 6-month trial period, through February 1980, at which time this policy was to be reviewed by the Government. In March 1980, this review was in process and the liberal export policy remained in effect.

In November 1979, an official of the British scrap industry told us that now that the export controls have been removed, the United Kingdom's export market will expand. He said that Spain, Turkey, Greece, Pakistan, and India have and are developing electric furnace operations and their steel producers will need increasing amounts of scrap.

In 1977, there was free trade in scrap for 6 months of the year and net exports to countries outside the EEC totaled 434,000 metric tons. This compares with a net import position of 289,000 metric tons in 1976, when exports of high-grade scrap to non-EEC countries were prohibited and quotas were in effect for lower grades. In 1978, there was free trade for 9 months and net exports outside the EEC increased to 860,000 metric tons.

France

According to French Ministry of Industry officials, the scrap market should be looked at from an EEC rather than a national perspective. France generally supports the new EEC proposals for a more liberal scrap export policy. As of November 1979, France had no restrictions on exports to third countries, although an export licensing system was in effect.

Italy is the main market for French surplus scrap. In recent years, however, French exports to non-EEC members, primarily Spain, have increased. In 1976, net exports to third countries amounted to 177,000 metric tons, whereas in 1978 they totaled 243,000 metric tons.

A French scrap industry official said that even with a liberal export policy, there is not much potential for increasing France's exports to countries where ocean transportation is required. This official said that dock-loading costs in France are very high and this would make French scrap noncompetitive.

FAR EAST

Although Japan ranks behind the United States and the EEC as a producer of ferrous scrap, practically all of its scrap is used for domestic purposes and must be supplemented by substantial imports. Since Japan is a scrap-deficit country, any significant outside demand for Japanese scrap would put tremendous upward pressure on the price, making it uneconomical for other countries to buy Japanese scrap. Thus, even though

Japan has no legal restrictions against the export of scrap, it exports very little, usually about .2 million metric tons a year. Most of this scrap is purchased by Korea.

INTERNATIONAL REVIEW OF MEASURES AFFECTING TRADE

In October 1978, the steel committee of the Organization for Economic Cooperation and Development was established to develop cooperative international methods for dealing with the fundamental cyclical and structural problems in the world's steel industry. The committee's responsibilities include monitoring developments in the steel sector, developing multilateral guidelines for government steel policies, and consulting on such policies in the committee.

In April 1979, the steel committee requested Organization members to provide data on their measures, including export policies, which affect international trade in ferrous scrap and other iron and steelmaking raw materials. As of November 1979, replies had been received and summarized for all members except Australia, Greece, and Spain. This information was considered in preparing our report.

We were told by the Director of the steel committee secretariat in November 1979 that most committee members did not then consider the availability of ferrous scrap to be a significant problem. They believed that the committee should address more fundamental questions relating to the world's steel industry.

APPENDIX I

BIBLIOGRAPHY OF SELECTED FERROUS SCRAP STUDIES

Battelle Columbus Laboratories. "The Processing Capacity of the Ferrous Scrap Industry." Columbus, Ohio. 1976.

This survey, based on questionnaires sent to members of the Institute of Scrap Iron and Steel, focuses on ferrous scrap processing capacity, processing volume, and equipment available or on order for scrap processing operations. Essentially, the study concluded that in 1974 the scrap industry had the capacity to prepare at least double the amount of scrap required during the record demand period of 1974. Moreover, with the additional planned or projected equipment installation, the industry would have more than sufficient capacity to supply scrap to meet potential demand.

Economic Consulting Services, Inc. "The Impact of U.S. Exports of Ferrous Scrap on U.S. Ferrous Scrap Prices: An Empirical Analysis." Washington, D.C. March 1979. (Updated Feb. 1980.)

This empirical analysis, commissioned by the Ferrous Scrap Consumers Coalition, tests the hypothesis that U.S. scrap exports have a comparatively greater impact on U.S. domestic scrap prices than does domestic demand. The study, based on a series of simple and multiple regression analyses, concludes first, that there is a strong correlation between total consumption and prices and second, that export fluctuations have had a greater impact on U.S. domestic prices than have changes in domestic demand. The updated study confirms the results of the earlier study.

Hogan, William T. and Koelble, Frank T. Industrial Economics Research Institute, Fordham University. "Purchased Ferrous Scrap: United States Demand and Supply Outlook." New York. June 1977.

This report, sponsored by the American Iron and Steel Institute, represents a highly detailed study of demand for scrap in the United States, export demand for U.S. scrap, and U.S. scrap supplies available to 1982. It addresses demand patterns, the composition of demand, the impact of technological changes, and those factors likely to affect world scrap demand.

The report concludes that U.S. supplies of purchased scrap will by 1982 fall short of total export and domestic demand by some 11 million tons. That conclusion is supported by underlying assumptions that expanding the use of electric furnaces will increase scrap demand, technological improvements will reduce supplies of home scrap, and supplies of obsolete scrap will not increase significantly in response to price increases.

Institute for Iron and Steel Studies. "Ferrous Scrap: The Feral Resource." Green Brook, New Jersey. September 1979.

This report, based on a study of potential ferrous scrap availability and use, forecasts that there will be an overall surplus of scrap in the United States throughout the remainder of the 20th century but that over short periods of a year or two critical shortages will exist. It states that the large number of electric furnace installations announced by integrated steel producers in the last few years suggests that the price of scrap is still a bargain; for how long and where, however, is uncertain.

Massachusetts Institute of Technology. "The Effects of Technological and Policy Variables on Capacity, Raw Material, and Energy Requirements of the U.S. Steel Industry." Cambridge, Mass. October 1977.

This report, prepared for the U.S. Department of the Interior, summarizes a portion of the results of a continuing study of the future raw material needs of the U.S. steel industry. It states that new and replacement BOF/electric furnace ratios of 2:1 and 1:1 cannot support U.S. scrap exports of 8 million tons per year if the system is to remain in equilibrium. Moreover, even at a ratio of 3:1, it appears that the United States cannot afford to export scrap at approximately 8 million tons per year--as has been the recent trend--until some time after 1985 without risking the creation of a serious scrap shortage within the United States.

An updated and final report on this subject is expected by approximately June 1980.

Robert R. Nathan Associates, Inc. "Iron and Steel Scrap, Its Accumulation and Availability as of December 31, 1975." Washington, D.C. 1977. "Iron and Steel Scrap, Its Accumulation and Availability Updated to December 31, 1977." Washington, D.C. 1978.

APPENDIX I

These studies, prepared for the Metal Scrap Research and Education Foundation, the research arm of the Institute of Scrap Iron and Steel, seek to measure potential reserves of ferrous scrap metal as of the end of 1975 and 1977. Beginning with a 1955 reference figure from a Battelle Memorial Institute report, the study computes the flow of scrap into and withdrawals from the potential reserve base to arrive at potential reserves of 636 million tons in 1975 and 672 million tons in 1977.

The 1975 study states that the potential reserves could supply the total purchased scrap requirements at 1975 levels for the entire American steel and foundry industries plus exports for 14 years, not counting the additional millions of tons of obsolete scrap being generated each year. Potential reserves are defined in the 1977 study as quantities which are recoverable with the use of existing technology and at high but realistic prices (that is, prices possibly several times higher than those generally prevailing in mid-1977).

GLOSSARY

basic oxygen furnace	A type of steelmaking furnace using molten iron and scrap as the main raw materials. The process involves introducing commercially pure oxygen by means of a lance or pipe into a vessel holding the molten iron and scrap.
billet	A semi-finished steel product (long and usually square in shape) which requires further processing and shaping into other forms, such as steel bars, rods, and pipes.
blast furnace	A cylindrical steel vessel used to produce molten iron for subsequent use in steelmaking. Coke, iron ore, and limestone are charged into the top of the furnace and exposed to blasts of hot air from the bottom of the furnace. The heat removes oxygen from the ore, and the molten iron produced collects in the bottom of the furnace.
composite price	In the United States, the average price of scrap (usually No. 1 heavy melting steel scrap) delivered to consumers at Pittsburgh, Philadelphia, and Chicago.
continuous casting	A process for the continuous forming of molten steel directly into the form of slabs, blooms, or billets, thus eliminating the ingot stage and the necessity of primary hot-rolling operations.
direct reduction	Any process for reducing iron ores or oxides that bypasses the intermediate step of making hot metal or cold pig on the way to producing iron and steel. The process yields a product very high in iron content that can be charged directly as a substitute for scrap.

electric arc furnace	A steelmaking furnace using scrap as the principal raw material. Scrap is placed in the furnace, a shallow steel cylinder, and electrodes are lowered through the roof. The electric power is then turned on, and the heat resulting from the arcing between electrodes and metal melts the solid scrap.
furnace charge	The minimum combination of materials placed in a furnace which together provide the balanced complement necessary to produce molten metal of the desired specification.
home scrap	Metal wastes generated within a steel mill during the iron and steel production process. Also referred to as "revert" scrap.
hot metal	The molten iron from a blast furnace that goes in molten form to primarily basic oxygen furnaces for use in steelmaking.
ingot	The first solid shape that molten steel will normally take. Molten steel is poured from the furnace into ingot molds which later solidify and are formed into other semi-finished shapes, such as billets.
net ton	A standard U.S. weight equal to 0.907 metric tons or 2,000 pounds. Also referred to as a short ton.
no. 1 heavy melting steel scrap	A grade of scrap, specified as "wrought iron and/or steel scrap one-quarter inch and over in thickness."
no. 1 bundles	A grade of scrap, specified as "new black steel sheet scrap, clippings or skeleton scrap, compressed or hand bundled, to charging box size, and weighing not less than 75 pounds per cubic foot."
obsolete scrap	Scrap consisting of discarded items of iron and steel.

open hearth furnace	A steelmaking furnace in which limestone, scrap steel, and molten iron are charged into a shallow steelmaking area called a "hearth" and are exposed to the sweep of flames which emanate from opposite ends of the furnace alternately.
pig iron	The molten iron from a blast furnace that is cast into solid form.
prompt industrial scrap	Scrap generated as a byproduct of industrial manufacture, consisting of punchings, stampings, turnings, borings, and other discarded fragments of industrial production.
purchased scrap	All scrap, regardless of source, that is subject to commercial transaction. Generally this would comprise the categories of prompt industrial and obsolete scrap.
raw steel	Steel in the first solid state after melting, suitable for further processing or sale, which includes ingots, steel castings, billets, etc.
rolling mills	Mills that shape ingots into semi-finished steel shapes, such as billets.
shredded scrap	A grade of scrap classified as "homogeneous iron and steel scrap, magnetically separated, originating from automobiles, unprepared no. 1 and no. 2 steel, miscellaneous baling and sheet scrap."
slab	A semi-finished steel product, oblong in shape.
sponge iron	The products of high iron content produced by the direct-reduction process.

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