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An Evaluation of Proposed Policies Concerning

Japanese Steel Exports and the

United States Steel Industry

by

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ABSTRACT

The purpose of this thesis is to analyze the impacts of several proposed policies dealing with the high level of foreign steel mill product imports to the U.S. and to recommend a "preferred" plan of action regarding the United States steel industry, foreign steel exporters to the U.S., and the U.S. domestic steel consumer. The trend of high levels of foreign steel imports to the U.S. has created domestic market and employment dislocations that are important to the economic health of the U.S. In order to deal with these issues, the U.S. government must develop an effective policy to insure the continued viability of the U.S. steel industry.

Three policies, two commercial (international) and one set of internal policies, will be analyzed. The method of analysis of the two commercial policies, the trigger price mechanism, and the voluntary restraint agreement is identical. The major parameters defining and influencing the policies are stated, explained, and then projected to 1985. The future of the policy is determined by the sum of the effects of the parameter projections. With the future of the policy forecasted, the effect of the policy on the

U.S. steel industry, Japanese steel exports to the U.S., and the welfare of the U.S. consumer can be determined. Accurate forecasting of the parameters governing the various proposals is necessary for actual implementation. The forecasting methods utilized in this report are ment to yield reasonable values for the purpose of calculation of future values of the proposed policy.

The internal methods to be considered will be the sum of several proposals designed to aid the industry in capital formation and increased efficiency. These internal methods include; tax modifications, Environmental Protection Agency regulation modifications, changes in U.S. steel industry management, and changes in U.S. steel industry output mix.

In addition to the analytical methods mentioned previously, the political and social impact of the implementation of any suggested plan of action will be considered. Often the non-economic constraints determine the acceptability of a program.

The U.S. steel industry will definitely need the aid of the U.S. government in order to remain competitive in the U.S. domestic market. The trigger price mechanism will likely be disgarded by 1981 at the latest due to the strengthening dollar/yen situation and rising U.S. steel industry input costs. The voluntary restraint agreement is a more workable solution because the quantitative restriction on imports enables the U.S. steel industry to make expansion and marketing decisions more accurately. The voluntary restraint agreement, however, raises questions of protectionism and restraint of free trade. The best long-run solution to the problem of steel exports to the U.S. is the negotiation of a multilateral import/export program involving all steel producing nations. The establishment of a multilateral steel program would stabilize world prices, reduce dumping, and minimize harm to domestic steel industries.

The intervention of the U.S. government in the domestic and international steel market under a voluntary restraint agreement, or a multilateral import/export program, creates an obligation on the part of the U.S. steel industry. Since the U.S. steel industry would derive a market advantage from the negotiation of an international quantitative agreement, the industry would be required to re-invest the excess profits above the all manufacturing average in plant and management modernization. In this manner, the U.S. domestic steel consumer would eventually reap the benefits of lower steel prices through modernization.

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CHAPTER 1. INTRODUCTION

By the mid-1960's, the United States steel industry (USSI) realized that imports of steel mill products were capturing a progressively larger share of the U.S. domestic steel market and that USSI export levels were stagnant. In fact, as shown in Table A-1, the USSI's dominant position in world steel output had been eroding since 1945. As the war ravaged economies of Western Europe and Japan recovered from WWII and continued to strengthen into the 1960's, their steel industries became increasingly price competitive with the USSI. Table A-2 indicates the rapid growth of foreign steel imports into the U.S. since 1961. Japan's emergence as the dominant foreign source of imported steel mill products by 1965 is illustrated in Table 2-1, page 11.

There were several reasons for significant increases of steel mill product imports to the U.S. First, Western, European and Japanese steel industries were considered vital parts of domestic recovery programs and were assisted in their revitalization efforts by sympathetic governmental policies. Secondly, the adoption of the most efficient and modern steel producing technologies were not impeded by a backlog of obsolete plants and recalcitrant labor unions.

Finally, and of great importance, they enjoyed virtually open access to the American steel market, which was largely free of trade restrictions. This was further supported by the American desire to promote economic recovery in Western Europe and Japan.

At the same time, the USSI was already a mature industry. Harnessed by old, often outdated physical plants, costly upkeep, and high labor costs, it increasingly was unable to compete in domestic or international markets. Faced with an eroding domestic and a collapsed international market, the USSI attempted to protect at least its domestic market through the lobbying efforts of the American Iron and Steel Institute (AISI).

Since the USSI is vitally linked to every producing industry in the U.S., an increase in the price of steel has a pronounced ripple effect. Of course, the size of the effect depends upon the amount and type of steel used in the industrial process of end product. Due to the central importance of steel in the economy of the U.S., it is of paramount importance that the U.S. does not become overly dependent on foreign sources to satisfy domestic steel demand. Therefore, the revitalization of the USSI is necessary to insure a secure domestic economy.

This thesis will evaluate proposed policies aimed at controlling the high level of Japanese steel industry (JSI) steel mill product exports to the U.S. Steel mill products, also known as finished steel products, include 32 items as defined by the AISI. Figure A-1 contains a list of steel mill products recognized by the AISI for use in import level calculations. Figure A-2 lists other steel and iron products not included in import level calculations.

Two commercial policies and one internal policy consisting of several proposals will be evaluated for their domestic and international impacts. The first commercial policy to be considered will be the trigger price mechanism (TPM) currently in force. The second will be a voluntary restraint agreement (VRA). The internal policy will consist of U.S. tax modifications, Environmental Protection Agency (EPA) regulation modifications, U.S. steel company management changes, and modifications in steel company output mix. The case of restriction-free international trade will not be considered since its likelihood in the foreseeable future is extremely remote.

A brief history of the JSI and USSI from WWII to the present will be presented in Chapter 2. This history is necessary for the full understanding of the JSI presence in the U.S. and its effect on the USSI. In particular, the major factors influencing the development and current status of the JSI and USSI will be discussed.

In Chapter 3, each policy alternative will be described in detail with respect to its content and purposes. The major factors affecting the policy under consideration will be listed and their relevancy discussed. Although the selection of parameters that have a dominant effect on the policy is somewhat subjective, the primary economic components of the policy will be defined by the parameters.

The projection of the parameters relevant to the policy alternatives in 1985 will be accomplished in Chapter 4. Due to the economic and noneconomic influences on the parameters, non-qualifiable factors dominate their future magnitudes. The future values of the parameters will be determined by stating the most important assumptions concerning the projections, an inspection of historical data, and the consideration of relevant economic trends. The sum of the effects of the projected parameters will be used to determine the future desirability of the commercial policies. The internal policies will be analyzed for their ability to generate needed capital and increased efficiency in the USSI.

Chapter 5 will analyze the alternative policies. The major analytical evaluation system employed for the two commercial policies will be the traditional supply-demand approach. The policies will then be examined more empirically for their effect on the USSI, JSI exports to the U.S., and the U.S. domestic consumer. Additionally, a discussion of the likely future of the commercial policies will be presented. The internal policies will be inspected in terms of their contribution toward projected capital expenditure needs of the USSI.

In the final chapter, conclusions concerning the USSI and policy alternatives will be discussed. In reaching a final recommendation for a national steel policy, political and welfare distribution issues will be considered in addition to the economic factors already mentioned. Also, the responsibilities of the USSI concerning the accumulation and reinvestment of excess profits will be stated. The handling of excess profits by the USSI is of paramount importance due to the potential for the abuse of unfair profits derived from the protected position of the industry.

All tables and figures in the text of the thesis will be inserted in the page following the reference and labeled with the chapter number followed by the number of the table. For example, Table 2-1 refers to Table 1 of Chapter 2. In Chapter 4, the figures illustrating the forecasted parameters are grouped at the end of each policy discussion. The tables and figures not occurring in the text of the thesis are indicated by an alpha-numeric designation. For example, Table A-1 refers to Table 1 in Appendix A.

CHAPTER 2. HISTORICAL BACKGROUND OF JSI AND USSI-INDUSTRIAL GROWTH AND INTERNATIONAL TRADE

Since the end of WWII, the USSI has been in a steadily eroding position with respect to its share of both international and domestic markets. In 1945, the U.S. produced 62.7% of the world's output of raw steel. By 1978, this figure had dropped to 17.5% (The international decline of the USSI is illustrated by Figure 2-1.) While the USSI declined internationally, foreign steel producers were increasing exports to the U.S. In 1945, the U.S. imported 54,000 net tons of steel mill products. By 1978, this figure had swelled to 21,134,582 net tons. At the same time, USSI exports of steel mill products declined to 2,421,688 net tons in 1978, from a level of 4,354,000 tons in 1945. Figure 2.2 illustrates the large import/export gap that has developed in the domestic U.S. steel mill product market.

Although over fifty nations export steel to the U.S., the vast majority of American steel imports comes from Europe and Japan. Unquestionably, Japan emerged as the most important steel exporting country to the U.S. in 1963, when its export share climbed to over one-third of all U.S. steel imports. The Japanese climb in steel mill product export

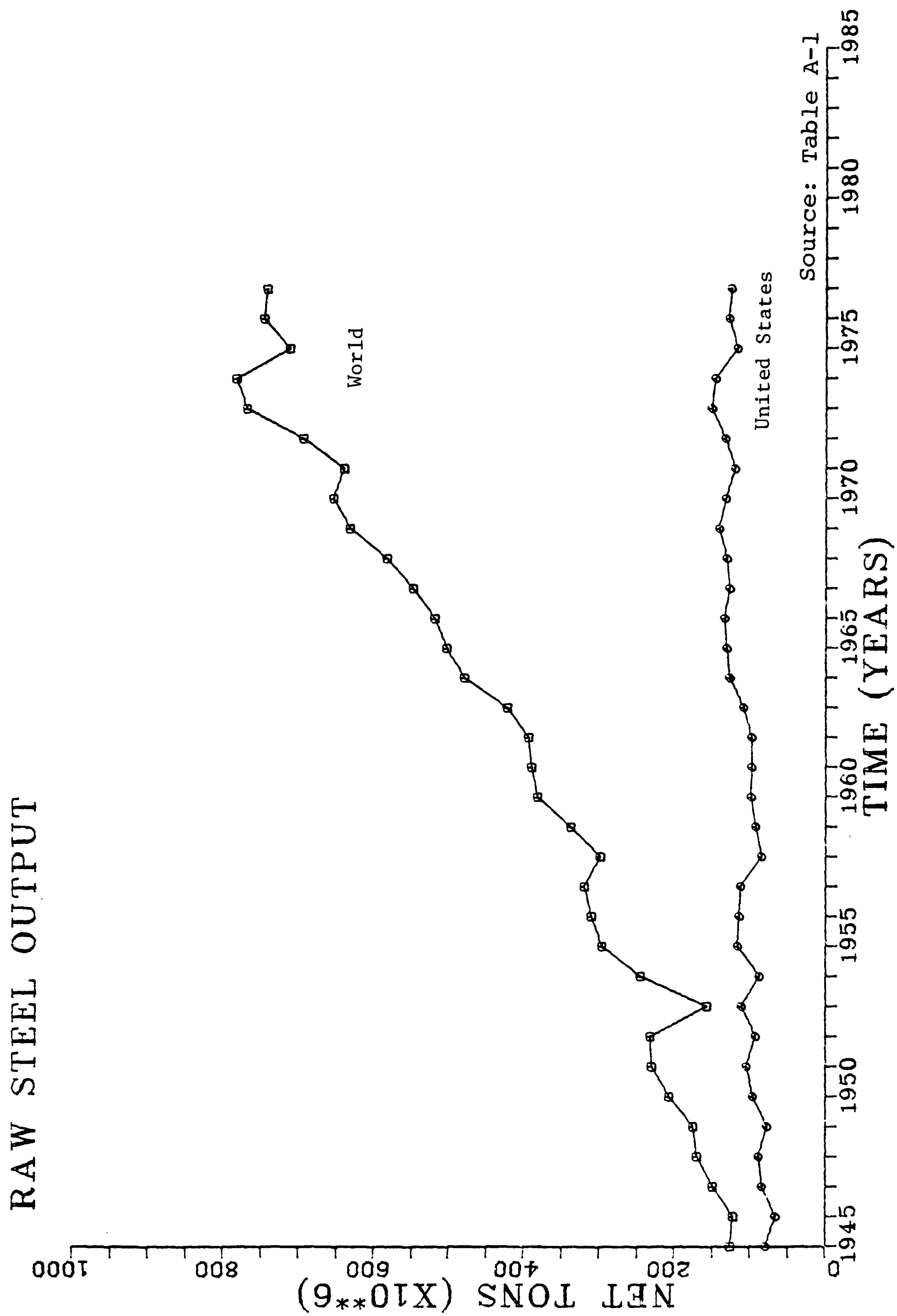

RAW STEEL OUTPUT
NET TONS (X10**6)
0
200
400
600
800
1000
TIME (YEARS)
1945
1950
1955
1960
1965
1970
1975
1980
1985
World
United States
Source: Table A-1

Figure 2-1.

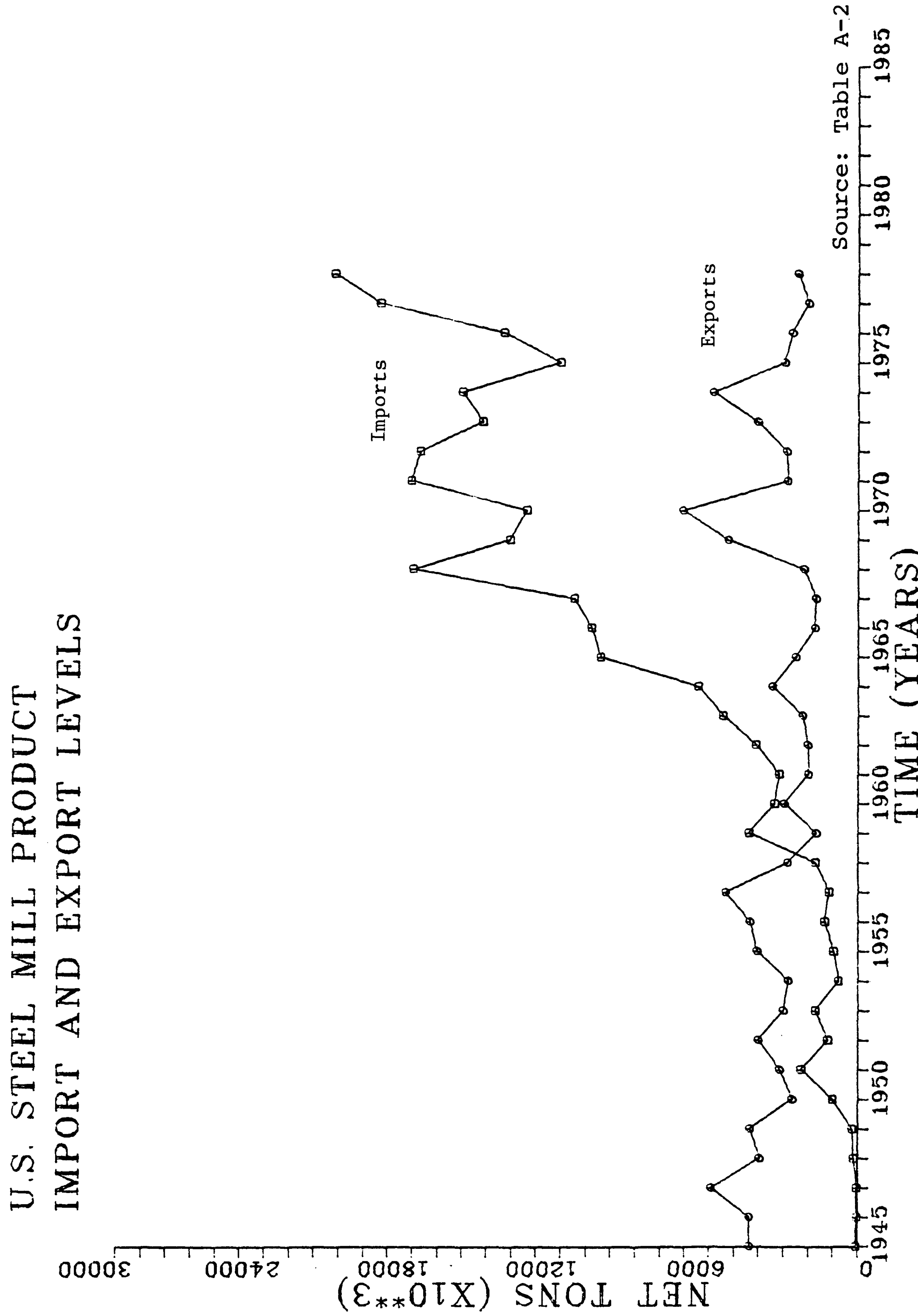

U.S. STEEL MILL PRODUCT
IMPORT AND EXPORT LEVELS
NET TONS (X10**3)
0
6000
12000
18000
24000
30000
TIME (YEARS)
1945
1950
1955
1960
1965
1970
1975
1980
1985
Imports
Exports
Source: Table A-2

Figure 2-2.

tonnages and percent of the total steel mill product export levels to the U.S. is shown in Tables 2-1 and 2-2.

In order to better understand the current Japan-U.S. export-import relationship, a brief comparative history of the USSI and JSI since WWII is necessary. This will serve to clarify the current U.S. and Japanese domestic and foreign policies concerning steel imports and exports. In addition, domestic government and industrial policies of the U.S. and Japan will be discussed with respect to their impact on the U.S. domestic steel industry.

JAPAN

The roots of the current JSI export situation concerning the U.S. lies in the development of the JSI since WWII. A knowledge of the various economic incentives and government policies that have resulted in Japan's export supremecy in the field of steel are necessary to understand USSI complaints and the policies to be considered. Only the industrial and governmental policies employed in Japan that had and continue to have a dominant effect on the JSI will be considered.

Table 2-1.

U.S. Steel Mill Product Imports

(thousands of net tons)

Year	Japan	Europe*
1945		
1946		
1947		
1948		
1949	2	189
1950	18	868
1951	113	2,071
1952	181	919
1953	119	1,409
1954	24	734
1955	96	693
1956	48	1,200
1957	31	997
1958	250	1,359
1959	624	3,237
1960	596	2,402
1961	596	2,202
1962	1,072	2,450
1963	1,808	2,720
1964	2,446	3,064
1965	4,418	5,130
1966	4,851	4,805
1967	4,468	5,940
1968	7,294	8,735
1969	6,253	6,418
1970	5,935	5,671
1971	6,908	9,181
1972	6,440	8,457
1973	5,637	7,048
1974	6,159	7,024
1975	5,844	4,531
1976	7,984	3,740
1977	7,820	7,681
1978	6,487	8,308

* - Belgium, Luxembourg, West Germany, France, United Kingdom, Sweden, Netherlands, Norway, Italy, Spain, Austria

Source: American Iron and Steel Institute Annual Statistical Report, various issues

Table 2-2.

Percent of Total Steel Mill Product Imports to United States

Year	Japan	Europe	Total Japan and Europe	Rest of World
1945				
1946				
1947				
1948				
1949	0.9	86.3	87.2	12.8
1950	1.8	85.6	87.4	12.6
1951	5.0	91.4	96.4	3.6
1952	15.1	76.5	91.6	8.4
1953	7.0	82.7	89.7	10.3
1954	3.1	95.2	98.3	1.7
1955	9.9	71.2	81.1	8.9
1956	3.6	89.8	93.4	6.4
1957	2.7	86.3	89.0	11.0
1958	14.6	19.6	94.2	5.8
1959	14.2	73.6	87.8	12.2
1960	17.7	71.5	89.2	10.8
1961	18.8	69.6	88.4	11.6
1962	26.1	59.8	85.9	14.1
1963	33.2	49.9	83.1	16.9
1964	38.0	47.6	85.6	14.4
1965	42.6	49.4	92.0	8.0
1966	45.1	44.7	89.8	10.2
1967	39.0	51.9	90.9	9.1
1968	40.6	48.6	89.2	10.8
1969	44.6	45.7	90.3	9.7
1970	44.4	42.4	86.8	13.2
1971	37.7	50.2	87.9	12.1
1972	36.4	47.8	84.2	15.8
1973	37.2	46.5	83.7	16.3
1974	38.6	44.0	82.6	17.4
1975	48.7	37.7	86.4	13.6
1976	55.9	26.2	82.1	17.9
1977	40.5	39.8	80.3	19.7
1978	30.7	39.3	70.0	30.0

Source: Computed from American Iron and Steel Institute Annual Statistical Report, various issues

The rapid rise in raw steel production in Japan is portrayed in Table 2-3. The boost in raw steel production is directly attributable to a cohesive government/industry relationship created and promoted after WWII. Although it is commonly believed that the JSI physical plant was virtually destroyed during WWII, this was not the case. Immediately after WWII, the controlling factor in raw steel production in Japan was the availability of raw materials and fuel, not the level of destruction of the physical plant.[1] This fact enabled the Japanese government to concentrate on allocation of resources rather than the task of rebuilding the JSI's physical plant in the initial stages of recovery.

By 1947, the Economic Stabilization Board (ESB) and the Reconstruction Finance Bank (RFB) had been established in Japan. The ESB established a preferential resource allocation policy to speed up the recovery of select industries, the iron and steel industries being so designated. Under the allocation policy, the iron and steel industry received priority treatment on domestic production and imports of oil and coal. The RFB gave the iron and steel industry high priority in obtaining much needed capital for modernization and expansion.[2] These two early programs demonstrated the

Table 2-3.

Raw Steel Production

(thousands of net tons)

Year	Japan
1945	2,302
1946	622
1947	1,032
1948	1,891
1949	3,430
1950	5,343
1951	7,168
1952	7,706
1953	8,457
1954	8,533
1955	10,370
1956	12,242
1957	13,856
1958	13,360
1959	18,331
1960	24,403
1961	31,160
1962	30,364
1963	34,724
1964	43,870
1965	45,372
1966	52,672
1967	68,512
1968	73,736
1969	90,547
1970	102,869
1971	97,620
1972	106,814
1973	131,530
1974	129,114
1975	112,781
1976	118,370
1977	112,878
1978	112,550

Source: American Iron and Steel Institute Annual Statistical Report, various issues

Japanese government's early identification of the iron and steel industry as being critical to the future welfare of the economy.

The will of the Japanese government is imposed on industry by the Ministry of International Trade and Industry (MITI), an organization unique to Japan. Established in 1949, MITI has developed a record of encouraging the creation of large semi-monopolistic firms through "administrative guidance." Nippon Steel, the largest steel company in the world, was created in 1970 when MITI encouraged the merger of Yawata and Fuji Steel companies.[3] There is no comparable government agency in the U.S. which provides such an overt government/industry link.

The decade between 1950-1960 proved to be critical in establishing Japan as a superpower in the international steel industry. The initial impetus for growth in the JSI was the Korean War. Due to Japan's proximity to Korea, United Nation and U.S. orders for steel products to support the war effort flooded in during 1950 and 1951. This enabled Japan to build large dollar reserves; a major portion of which were subsequently channeled toward re-equipping Japanese industries. The First Modernization Program of the JSI (1951-1955) emphasized cost reductions and capacity increases through renovation and expansion of existing facilities. The majority of the expenditures were disbursed by the six largest steel firms in Japan.[4] This perferential allocation of capital to the largest steel firms reveals the Japanese government's attitude of maximum use of economies of scale to produce the most efficient steel industry possible. The Second Modernization Program (1956-1960) differed from the First Modernization Program in that the emphasis was shifted to expansion of production by building new facilities. Japan was able to take advantage of a new process, the basic oxygen furnace (BOF) that was developed in Austria in 1953. The BOF is cheaper to install and more productive than the open hearth process, which was virtually universal in the steel industry prior to the introduction of the BOF.[5] The new BOF's and rolling capacity additions were installed on coastal sites, thereby minimizing transportation costs of imported raw materials. In addition, vertical integration of the new sites enabled further cost reductions in the areas of transportation of unfinished and semi-finished products and coordination of activities. The placement of new steel mills at coastal sites minimized the disadvantage the JSI incurred by having to import the majority of raw materials and fuel to produce steel. By 1960, the JSI had become competitive with other producers and exporters of steel in the world.

Additional policies and organizations that have aided in the development of the JSI include the keiretsu, the trading company, and banking policies (capital availability) in Japan. The keiretsu is an association of businesses centered around a bank which provides a source of capital. In the iron and steel industry, the keiretsu association usually involves large steel manufacturers and various fabricators. However, it can also include companies from mining to marketing.[6] In this way, cooperation is encouraged through succeeding steps in the production process, minimizing the normal add-on costs of successive process steps.

On the international scale, trading companies serve as the link between the keiretsu and the international market. The trading company is usually involved in the areas of partial equity ownership, management, technical assistance and credit extension.[7] The trading company also obtains many of the imported raw materials utilized in the production of steel. Although the international price for steelmaking raw materials can be ascertained, the price the steel company pays for the raw materials is clouded by the internal pricing and transfer arrangements of the trading company. In this way, the JSI cost of production is obscured, and difficult to determine. In times of high input costs, other members of the keiretsu and trading company can bear part of the increased costs.

One of the main concerns of any industry is the ability to accumulate capital through loans or generation of profits. Since there are few stockholders, the JSI does not have to post dividends in order to attract capital by public investment. The lack of public investors enables the JSI to reinvest the cash flow in modernization and expansion of facilities.[8] Even with this ability to reinvest virtually all profits, the JSI relied on 17.3% equity and 82.7% debt to support expansion, in 1974, while the USSI assumed a 76.8% equity and 23.2% debt burden to finance expansion.[9] The higher debt carried by the JSI forces the steel mills to be operated at maximum capacity. The high interest charges on the debt are considered a fixed cost. In addition, the JSI has a practice of lifetime job guarantees for employees, which is also considered a fixed cost. The JSI is more efficient at high operating rates due to the high fixed cost burden. Therefore, there is an incentive to operate at above the level which will cover variable costs and make at least some contribution toward fixed costs even if there is an overall loss when the product is sold.

The JSI is currently the most modern and efficient producer of steel among major steel exporting countries. The dominance of the JSI in the steel exporting area is the result of the economic policies of the Japanese government and industry since WWII. Today, however, Japan faces an economic slowdown as increases in input costs have reduced their comparative advantage in the production of iron and steel as well as other goods. The floating exchange rates have had the effect of increasing the value of the yen with respect to the dollar, thereby causing Japanese exports to cost more in the U.S. In addition, the JSI has been handicapped by rigorous environmental legislation and lack of land for expansion. Also, Western Europe and the United States, Japan's main export markets, have adopted increasingly protectionist views concerning their domestic steel industries and markets. Thus, Japan has been forced to emphasize the development of the third world markets in China, South America, and the Middle East as future markets for their products. Although faced with increasingly hostile government policies in countries importing JSI products, Japan has maintained an ultra-competitive position in the international steel industry.

UNITED STATES

The history of the USSI since WWII is in sharp contrast to the development of the JSI. The general structure of the USSI since WWII has been fairly stable. The primary mode of increasing raw steel capacity has been to expand existing facilities (brownfield addition), rather than to add capacity by building a new steel mill (greenfield addition). Capital expenditures since WWII have mainly been to recondition units, replace obsolete facilities, reduce costs, abate pollution, and improve existing facilities rather than to expand steelmaking capacity.[10] From 1950 to 1976, USSI output grew at an annual rate of 1.6%, while JSI output grew at an annual rate of 14%.[11] Since 1945, there have been only two integrated greenfield steel mills constructed in the U.S.; the Fairless (Pennsylvania) plant of U.S. Steel in 1953, and the Burns Harbor (Indiana) plant of Bethlehem Steel in 1967. The brownfield additions of the USSI have been modern and up to JSI technology standards. They were, however, tied to older, less efficient facilities of the same steel mill, which diluted productivity gains.

The question of JSI versus USSI labor productivity is more a function of capital investment, economies of scale, and capacity utilization than individual human effort. The amount of man-hours of labor per metric ton of steel produced by Japan versus the U.S. is an indicator of the relative efficiencies of the physical plant as well as the level of effort of the workers. In the time period 1956 to 1976, the JSI reduced the man-hours required to produce a metric ton of steel from 60.66 to 9.46, while the USSI reduced the man-hour requirement from 16.31 to 11.82. Tables A-3, A-4, and A-5 are tabulations of input levels and costs involved in the production of steel in the USSI and the JSI.

The area of greatest advantage for the JSI is in the area of hourly wage rates. Currently, USSI worker hourly wage rates are far above the all-manufacturing wage rate in the U.S. This is the result of steel strikes and constantly escalating wage and fringe benefit demands from the steelworkers union.

Although labor costs are quite high in the USSI, mergers and concentration of production, which would increase productivity and efficiency, have not occurred to a great degree in the USSI. In 1946, the four largest steel corporations in the U.S. accounted for 62.1% of steel production; by 1977, this figure had dropped to 51.1%.[12] Since 1950, there have been 45 mergers involving steel companies, 6 were classified as horizontal; 12 as vertical; 17 as product extension; and 10 as conglomerate.[13] The USSI is monitored closely by the U.S. government concerning mergers and acquisitions that would violate anti-monopoly and restraint of trade legislation.

Since the price of steel affects the price of virtually all products produced in the U.S. to a certain degree, the U.S. government has exerted de facto price controls over the USSI. Most products in the USSI are standardized products; that is to say the quality, specifications and dimensions of a certain product are the same throughout the USSI. This led to the development of list prices for steel products. The list price of an item is virtually identical from one steel mill to the next. The list price system replaces competition with conformity. The normal system of increasing the list price of an item consists of one of the larger steel companies announcing a price increase with the other steel companies following suit in the very near future. These price increases are normally decried as inflationary by the U.S. government. This government intervention in the pricing practices of the USSI has had a negative effect on the internal capital generation abilities and profitability of the industry.

The long term health of an industry is determined by its level of profitability. The rate of return on equity is normally used to determine profitability. Since 1950, the USSI has averaged 8.9%, while the all manufacturing average was 11.5%. In the decade 1969 to 1978, the USSI averaged 8.1% return on equity while the all manufacturing average was 12.4%.[14] The growing gap between the profitability of the USSI and the all manufacturing average is of critical importance to the USSI. The potential investor will be wary of investing in an industry exhibiting the low profitability of the USSI. The opportunity cost of approximately 4% return on equity is a large figure to overcome when capital is being sought through loans or private investment. Obviously, the low profitability of the USSI has caused the industry great difficulties in attracting capital.

Added to the scarcity of investment capital is the non-productivity expenditures for environmental regulations. Since the mid-1960's, the expenditures for environmental equipment in the USSI has steadily climbed until in 1978 it accounted for approximately 20% of capital expenditures.[15] In addition, compliance with Environmental Protection Agency (EPA) regulations is somewhat nebulous due to incomplete federal and state regulations and guidelines. The inability to economically conform to environmental regulations has contributed to the closure of marginal steel facilities in the U.S.

It can easily be seen that the USSI fits into the classic mold of a declining industry; low profitability, declining domestic and international markets, inability to modernize sufficiently to be internationally competitive, high production costs, and inability to attract investment capital. This situation of the USSI has been exploited by exporters of steel products to the U.S. In 1959, U.S. imports of steel exceeded exports for the first time. The gap has grown at a steady rate since the early 1960's.

The first move to stem the flow of foreign steel imports came in February 1966, when L.B. Worthington, chairman of the AISI called for a tariff to prevent what was termed unfair and unrestricted steel imports into the U.S.[16] In the summer of 1968, both the German and Japanese steelmakers proposed VRA's concerning steel export levels to the U.S. in order to stop pending legislation in the U.S. Congress. In 1969, the total import level was fixed at 14 million net tons. The quota was allocated in the following manner; 41%-Japan, 41%-Europe, 18%-rest of world (ROW). The total level was permitted to grow 5% annually. When the VRA was renewed in 1972, no specific tonnage ceilings were specified, but the product mix of exports to the U.S. were defined more closely.[17] The total VRA program is examined more closely in Chapter 3.

The steel shortage of 1973-74 pushed JSI export prices up to $60/ton over U.S. domestic prices. This premium had to be paid by some U.S. consumers because the USSI was unable to supply 100% of U.S. domestic needs.[18] The steel shortage enabled the JSI to gain a firmer hold in the U.S. market by offering steel from foreign sources. In addition, the JSI took the opportunity to secure long term contracts with U.S. customers who were uncertain about obtaining steel domestically.

The critical situation of the USSI appeared in the time period 1975-77. As shown in Table A-2, USSI finished steel shipments decreased drastically in 1975 and recovered slightly in 1976 and 1977. At the same time, imported steel captured an ever increasing share of the U.S. domestic market. The situation peaked in 1977 when large numbers of steelworkers were laid off and several marginal steel plants were closed. Faced with this situation, the USSI again requested help from the U.S. government to stem the flow of foreign steel imports. The USSI claimed foreign producers were dumping steel mill products in the U.S.; that is, selling products in the U.S. at less than the cost of production in the country of origin. (The U.S. Statute covering dumping and illegal pricing practices is compiled in Appendix B.)

In answer to the request for help from the USSI, the U.S. government instituted the TPM in February, 1978. The TPM provides for the calculation of the fair market value of steel mill products. Selling at prices below the TPM in the U.S. must be supported by evidence of lower cost of production or an anti-dumping suit will be initiated by the U.S. government. The full TPM program is described in Chapter 3.

The situation of the USSI as a declining industry does not reduce its importance to the United States as a key industry for economic health. In this respect, the U.S. government is warranted to take action to protect the USSI, even at a cost to the U.S. consumer. The three policies to be considered represent the programs that provide the most balanced distribution of welfare to all parties concerned.

CHAPTER 3. DESCRIPTION OF POLICIES AND PARAMETERS

By 1977, it was evident that the USSI was in serious trouble concerning its ability to survive as a viable industry in the United States. The ever increasing share of the U.S. domestic steel market being lost to foreign competitors made U.S. government action necessary. The initial governmental response in 1968 was the establishment of a VRA which, in effect, was a quota. The VRA lasted until the 1973-74 steel boom. From 1975-1977 the U.S. domestic market continued to become increasingly import oriented. This chapter will describe the two commercial policies and the internal methods to be considered for implementation. The parameters affecting the program will be listed and discussed.

The current government policy regarding foreign steel imports is the TPM. The TPM will be described concerning its content, aim, and administration. The main parameters influencing the creation, modifications, and updating of the TPM will be stated and discussed.

The VRA's in force from 1968 to 1974 will be described and examined for their effects on steel mill product exports to the U.S. The VRA proposed for possible implementation will then be described and the calculations necessary for determination of import levels will be presented. The parameters involved in the creation and monitoring of the VRA will be stated and discussed.

The internal policies to be considered in aiding capital formation in the USSI include tax modifications, EPA regulation modifications, modification of management, and changes in output mix. The components of proposed capital outlays (capacity expansion, environmental control expenditures, and operating expenses) will be defined with respect to the projected growth rate of the USSI.

TRIGGER PRICE MECHANISM

In a highly publicized meeting with the leaders of the USSI on October 13, 1977, President Carter stated that the Nation's antidumping laws "have not been vigorously enforced," which he called a "derogation of duty" on the part of the government.[19] It was from this meeting that President Carter charged the Treasury Department with the development of an appropriate plan to deal with the USSI's charges of dumping and unfair trade practices with regard to foreign steel imports in the U.S. On February 1, 1978, the TPM was officially implemented, although compliance was not required on most products until April 30, 1978. Some steel items were granted a "grace period" until July 1978.

The basis of the TPM is the Trade Act of 1974, which covers dumping and other unfair trade practices. (The pertinent provisions of the Act are presented in Appendix B.) An important feature of the TPM is the "fast track antidumping investigations."[20] Previously, dumping complaints took 1-2 years to determine.[21] Under the TPM system, if an exporter of steel to the U.S. was found to be selling steel below the trigger price and at less than fair value, an antidumping ruling could be made in 2-3 months.

The trigger prices were developed by the U.S. Treasury Department by considering the cost of production of steel in Japan, the "most efficient" industrialized steel producing nation. The components of the cost of production are presented in Table A-3. The trigger prices are calculated by adding to the constructed cost of production: ocean freight (depending on destination), handling, interest (on deferred payment), insurance, and "extras" involving special metallurgical processes and sizing. The added charges will vary according to the area of the U.S. that the imports are shipped to; East Coast, West Coast, Great Lakes, or Gulf Coast. The initial TPM prices that were developed were approximately 5% under domestic prices. The Treasury Department issued trigger prices for 17 steel import classes which covered 75% of import tonnages, but later expanded the list to include all 32 classes of steel products.[22]

The TPM is recalculated each quarter to account for changes in input costs, operating rates, and international exchange rates. There were no adjustments to the TPM in the first or second quarter of 1978 due to implementation problems. In the third quarter of 1978, there was an average product price increase of 5.5%. In the fourth quarter, the increase was 4.68%. The increase for the first quarter 1979 was 7.0%, which could have been as high as 10% if the full effect of the yen/dollar appreciation had been taken into account.[23] The TPM levels for the second quarter, with the exception of a few items that were reduced.[24] The third quarter TPM levels were reduced by an average of 1.4%.[25]

It should be noted there is an inherent lag in the computation of the TPM each quarter. The yen/dollar rate used is an average of the previous two months, and is therefore not strictly current. Moreover, the cost of production data furnished by the JSI is historic data. In addition, the TPM levels are published 6 weeks in advance of the quarter they are to take effect in. All of these factors decrease the effectiveness of the TPM by producing a time lag from calculation to implementation of the TPM.

The steel imports to the U.S. are monitored by the Customs Department. Upon reporting to the Treasury Department of steel imports selling below trigger prices, the Treasury Department will investigate the charge and determine if an antidumping suit should be filed against the exporter.

The following parameters are the main factors determining the future course of the TPM. The first two factors; the JSI cost of production and the yen/dollar exchange rate are direct inputs to the TPM calculation. The JSI export price to the U.S. and the total U.S. imported steel level mirrors the accuracy and effectiveness of the TPM. The USSI cost of production and the profitability of the USSI are

U.S. domestic influencing factors and indicate the general health of the USSI.

The JSI Cost of Production

The JSI cost of production is the foundation of the TPM system. Any adjustments to the TPM are based on the changes in the cost of production of steel in Japan. The costs of production are recalculated each quarter, by the Office of Special Programs, in order to derive the new TPM levels for each steel product item. In this way, the TPM is updated to take into account recent changes in input costs and capacity utilization. Therefore, some items may have their TPM level increased while at the same time others may decrease.

Yen/Dollar Exchange Rate

After the TPM was established in February 1978, the dollar continued to decline in value with respect to the yen. This decline is shown in Table A-8. When the quarterly revised TPM levels are calculated, the yen/dollar exchange rate used to convert JSI costs expressed in yen to dollars is the average of the previous two months' exchange rates. The continued decline of the dollar in 1978 caused the TPM to rise. As the dollar strengthened in 1979, the TPM showed signs of a slight decrease. Therefore, the yen/dollar exchange rate is critical to the determination of the TPM levels.

JSI Export Price in the U.S.

With the current high TPM levels, the JSI export price for steel mill products is very close to the USSI domestic price level. However, if the TPM is lowered due to increases in the yen/dollar exchange rate, the JSI export price will follow the decrease in the TPM. When the TPM is 5-8% below the USSI domestic price, the JSI export price will be low enough to compete for an increased share of the U.S. domestic market.

USSI Cost of Production

Although the TPM is based on JSI cost of production, the USSI cost of production is a factor in detemining the TPM levels. Peter Ehrenhaft, deputy assistant secretary of the Treasury, the senior man in the Office of Tariff Affairs, states:

> The particular level of the trigger prices based on the Japanese cost of production . . . in part evolves out of our discussions with American steelmakers as to what they contend was their problem. When they told us that this (price level) was a level at which they could compete, we thought that this was a very appropriate (level) and least disruptive to trade.

> (We thought it would be) the least inflationary and, therefore, the most appropriate level at which to set this monitoring device.[26]

This implied collusion of the U.S. government and the USSI reduces the objectivity of the TPM calculation which allegedly was based solely on JSI cost of production. It also validates the USSI cost of production as an important input to the calculation of the TPM.

Profitability of the USSI

Due to the low return on investment measured by profit as a percent of stockholder's equity (after tax), the USSI has been unable to generate enough internal funds or attract investment capital in order to modernize exisitng facilities or add significant steelmaking capacity (brownfield or greenfield). The January 1, 1979, TPM increase of 7% coupled with a USSI price increase of only 3.2% strengthens the USSI's ability to expand its domestic market share, and increase profitability.[27] If the TPM continues to rise at a greater rate than domestic prices, the USSI will be underselling foreign steel producers who export to the U.S., thereby recapturing lost domestic markets, generating more internal funds, creating higher profits, and attracting more investment capital.

Total U.S. Imported Steel Level

The level of imported steel from all foreign sources is the total measure of the success of failure of the TPM. The U.S. government originally sought to hold steel mill product imports to approximately 14% of national consumption by implementing the TPM.[28] The 18.1% import share of U.S. domestic steel mill product consumption was made bearable by the relatively high operating rate in the USSI.

Voluntary Restraint Agreement

Due to the marked rise in steel imports in the mid-1960's, as shown in Table A-2, the USSI sought government aid to combat the increasing import levels. In 1968, the U.S. Congress was seriously discussing the possibility of imposing a quota to stem the tide of steel imports. In the summer of 1968, the Japanese and German steelmakers proposed to voluntarily restrict their steel exports to the U.S.[29] The correspondence creating the 1968 and 1972 VRA agreements is complied in Appendix C. The import levels agreed to in the 1968 and 1972 agreements are summarized in Table A-14.

The 1968 VRA excluded the United Kingdom and Canada, and created a total steel mill product import ceiling of 14 million net tons (41%-Japan, 41%-ECSC, 18%-ROW). The import level was allowed to increase at a 5% annual rate for 1969, 1970, and 1971.[30] In the 1972 VRA, the United Kingdom was included in the agreement with the ECSC, but Canada was still excluded. In the second VRA, exports to the U.S. from the major steel producing countries were monitored without setting a firm ceiling.

There was a shift in the product mix in Japanese and total steel mill product exports to the U.S. under the VRA's toward the higher priced alloy steels. This trend is shown in Tables A-15, A-16, A-17, and A-18. During the same period, U.S. steel mill shipments (domestic production) mix changed little, as shown in Tables A-19 and A-20.

While adherence to the VRA levels was somewhat erratic, the largest deviation occurred in 1971. Conformance to the VRA's is compiled in Table A-21. President Nixon placed a 10% surcharge on imports on August 15, 1971, thereby effectively terminating the VRA.[31]

In order to consider the implementation of a VRA at this time, certain modifications and improvements over the original VRA's must be made. The changes enable the VRA levels to be calculated accurately and impartially. In speaking with Mr. D.F. Anderson of the International Iron and Steel Institute, he mentioned that the VRA approach is preferred by foreign steel exporters to the U.S. over the TPM.[32]

Due to normal lead times in ordering and consideration of relevant economic factors and trends, the demand for steel mill products can be fairly accurately predicted for 6 months in the future. Capacity additions (greenfield or brownfield) usually take several years of planning and work with state and federal regulatory agencies before the added capacity comes on line. Due to the long lead times involved, it is possible to forecast USSI raw steel capacity accurately for the near future.

The VRA import levels for carbon, alloy, and stainless steel would be published annually. In addition, not more than 30% of the annual total VRA level of carbon, alloy, or stainless steel would be permitted to be imported to the U.S. in any quarter, to prevent domestic market damage from import surges. The VRA levels would be a function of U.S. domestic demand, steelmaking capacity in the USSI, and USSI capacity utilization rate. The level of imports would permit a minimum capacity utilization rate of 85% because the break-even capacity utilization rate for the USSI is approximately 80%.[33] The import levels could be lower, but not higher, than that set to achieve a USSI capacity utilization rate of 85%.

Although over 50 countries export steel to the U.S., it would be impractical to negotiate an import level agreement with each one.[34] Firm import levels would be negotiated with Japan, the major steel exporting countries of the EEC (Belgium, Luxembourg, Netherlands, France, West Germany, United Kingdom, and Italy), and Canada. The remaining exporting countries and new exporting countries to the U.S. would be eligible for inclusion in the firm import level negotiations if their steel export level to the U.S. exceeded the lowest negotiated level of the previous four quarters.

The import levels would be published at the beginning of the fourth quarter (1 October) for the upcoming year. The distribution of the total VRA import quantity would be determined by the 3 year moving average level (percent) of steel mill product exports to the U.S. of the exporting country. In a similar manner, the carbon, alloy, and stainless steel import levels could be determined within the country's allocation.

Methodology for Calculating VRA Steel Mill Product Import Levels

The following system of calculation is employed in order to obtain the VRA import levels for each major country exporting steel mill products to the U.S. (Japan will be used as a representative country. However, similar calculations would be made for each major country exporting finished steel to the U.S.).

Step 1 - Calculation of minimum level of USSI finished steel production: the projected raw steel capacity (net tons) for the upcoming year is multiplied by the projected 3 year moving average of the yield to give the theoretical maximum finished steel production for the year. This is the maximum finished steel output of the USSI if all facilities are operating at 100% of capacity. This figure is then multiplied by minimum capacity utilization rate of

85% to produce the minimum total USSI finished steel production for the year.

Step 2 - Calculation of total finished steel import level (all country total): the minimum USSI finished steel production level projection (Step 1) is subtracted from the projected U.S. domestic demand for the upcoming year to give the projected total finished steel import level.

Step 3 - Calculation of import share for major exporting countries to the U.S.: The projected total finished steel import level (Step 2) is multiplied by the 3-year moving average projection of the JSI market share in the U.S. domestic steel market (percent) to give the total Japanese finished steel exports to the U.S. This is the total (all product) level of finished steel exports permitted to enter the U.S. from Japan.

Step 4 - Calculation of JSI carbon steel export level to the U.S.: total JSI finished steel export level to the U.S. (Step 3) is multiplied by the 3 year moving average projection of the percent of total JSI exports that are carbon steel. This gives the JSI carbon steel export to the U.S.

Step 5 - Calculation of JSI alloy steel export level to the U.S.: same calculations as Step 4 using the 3-year moving average of the percent of total JSI exports to the U.S. that is alloy steel.

Step 6 - Calculation of JSI stainless steel export level to the U.S.: same calculation as Step 4 using the 3-year moving average of the percent of total JSI exports to the U.S. that are stainless steel.

This example calculation is summarized in Figure 3-1. The following parameters are used to calculate the VRA levels. While VRA levels would be calculated for all major exporting countries, only Japan will be considered for this report.

USSI Raw Steel Capacity

USSI raw steel capacity projection is the basis for the calculation of the VRA import levels. The accurate determination of the raw steel capacity in the United States is

Figure 3-1.

Import Level Calculation Method

Projected USSI raw steel capacity
X Projected USSI yield (3 year moving average)
= Projected maximum USSI finished steel capacity
X 0.85 (Minimum capacity utilization rate)
= Minimum USSI finished steel production

Projected U.S. domestic supply (demand)
\- Minimum USSI finished steel production
= Projected total finished steel import level

Projected total finished steel import level
X Projected total import share (percent) (3yr. m.a.)
= Total Japanese finished steel exports to U.S.

Total Japanese finished steel exports to U.S.
X Japanese carbon steel export level to U.S. (percent of total Japanese exports to U.S.) (3 yr. m.a.)
= Japanese carbon steel export level to U.S.

Total Japanese finished steel exports to U.S.
X Japanese alloy steel export level to U.S. (percent of total Japanese exports to U.S.) (3 yr. m.a.)
= Japanese alloy steel export level to U.S.

Total Japanese finished steel exports to U.S.
X Japanese stainless steel export level to U.S. (percent of total Japanese exports to U.S.) (3 yr. m.a.)
= Japanese stainless steel export level to U.S.

fundamental for the determination of appropriate VRA import levels. The determination of the raw steel capacity of the USSI would be accomplished by the AISI which annually produces a statistical compilation of the USSI. The AISI statistics could be checked by the U.S. Department of Commerce which compiles similar statistics.

USSI Yield

In order to determine maximum domestic finished steel output, the yield of the USSI must be computed. Yield is defined as total quantity of finished steel produced divided by total quantity of raw steel produced. This figure, when multiplied by the amount of raw steel produced will give the theoretical finished steel production. The yield is somewhat sensitive to capacity utilization rates as demonstrated by the higher yields achieved during the steel boom of 1973-74. In order to smooth fluctuations in the yield, a 3-year moving average is used for calculations.

U.S. Domestic Demand (Supply)

For purposes of this report, domestic demand will be assumed to equal domestic supply (supply = domestic production + foreign imports - domestic exports). The difference between demand and supply lies in the stockpiles accrued during the year. Supply is the level of available steel. Demand denotes the actual purchase, or consumption of the steel. The stockpiles are assumed to be held at a relatively stable level, thereby equating supply and demand.

JSI Total Export Level to the U.S. (Percent)

In order to smooth export surges and unusually high or low total annual export levels to the U.S. from Japan, a 3-year moving average of JSI percent of total steel exports (all countries) to the U.S. will be used.

JSI Export Product Mix (Percent) to U.S.

For JSI carbon, alloy, and stainless steel exports to the U.S., a 3-year moving average of the percent of total JSI shipments to the U.S. is used to smooth export surges.

Internal Policies

Although the immediate answer to the USSI predicament is protection from foreign competition by the U.S. government, only the revitalization of the industry can offer any long term solutions. The USSI's low profitability and inability to attract investment capital are the major contributors to the current situation of the USSI. According to Richard M. Smith, a vice-chairman of Bethlehem Steel Corporation:

> The biggest problem facing the American steel is the gap between the amount of capital available to modernize and expand and the costs of such projects. And the bottom line, no matter how one slices it, is the need for increased profitability.[35]

In order to make reasonable capital requirement estimates for the USSI, a specified growth rate must be stated. The growth rate of the USSI will be determined and analyzed for projections in Chapter 4.

The internal U.S. policies that will be analyzed for their ability to increase the capital accumulation capability of the USSI include tax modifications, modifications in EPA regulations, changes in management, and changes in output mix. If the policies under consideration are administered to maximize benefit to the USSI, a substantial strengthening of the USSI would develop.

Tax Modifications

The tax modifications suggested by the USSI include reduction of the guideline life for depreciation of new steel industry equipment, pollution expenditure write-offs, and fixing the investment tax credit at 12%. The Revenue Act of 1978 reduced the corporate income tax rate from 48% to 46%.[36] Due to the recent nature of the decrease in corporate income tax, a further reduction of the corporate tax will not be considered. The reduction of the guideline life for depreciation of new steel industry equipment from 18 to 15 years would enable the USSI to accrue capital more quickly for reinvestment purposes. The 18 year life is high when compared to other industrial machinery lives, due to steel industry equipment being designed for longer life. If the guideline life is reduced to 15 years, the industry could depreciate its machinery and equipment in 12 years under the asset depreciation range system (20% less than the guideline life).[37]

If the USSI was permitted to take a 100% immediate tax writeoff for pollution expenditures, instead of having to wait until the euqipment is in place before the depreciation can be started, a large saving would develop. Engineering studies indicate it requires as much as three times as many dollars to replace worn out equipment as has been allowed to accumulate through depreciation.[38]

The 7-10% (currently 10%) investment tax credit has been available since 1962, except for short suspension and repeal periods. The total investment credit amounts to approximately 5% of USSI capital expenditures. The increase to a 12% credit would result in increased capital investment.

Environmental Regulation Modification

The projected expenditure share for environmental protection equipment is approximately 20% of all present and future capital investment.[39] The problem facing EPA regulation modification suggestions is that compliance with the regulations is sometimes nebulous. John P. Hilburn, Vice President-Environmental Regulations, Florida Steel Corporation, states:

> But compliance is a moving target - getting further away all the time. Regulators get paid to regulate. It seems that if you haven't made changes or invested any capital money lately, you're a prime candidate for their concerns.[40]

The ill-defined and incomplete nature of regulations due to revisions, updating, and personnel turnover has caused confusion concerning compliance in the USSI.

Modifications in Management

The object of effective management is to increase the productivity of an industry. Productivity can be increased by: 1) investing in more efficient capital assets, 2) developing a more effective labor force, and 3) more effective management of the production process and the capital funds that are available.[41]

The top level manager in the 1980's will most likely be a "special generalist".[42] The special generalist would have skills to integrate the input of several different types of lower level managers in order to make the proper decisions. This is divergent from the historical method of a manager in a certain specialty making decisions unilaterally in many fields. This would require the steel industry to insure a more broad base of experience for future top level managers. The experience required would not be only in the area of engineering, but would include marketing, sales, purchasing, and other related areas depending upon the structure of the company.

In a similar move toward the special generalist theory, team managing, also known as matrix managing, is being employed by many progressive companies. Where one manager used to make decisions in several fields, these decisions are now being made by management teams.[43] The use of team managing insures a variety of inputs concerning proposed solutions to a problem or suggestions for improvements.

Changes in Output Mix in the USSI

For a steel mill to change its output mix (shifting to different product lines) requires a massive capital outlay with no certain guarantee of financial success. However, there is some flexibility within product lines (sizing, shaping, and treating). If a company does shift product lines, sometimes it is the result of market erosion by imports. In exceptional cases (e.g., the Alaskan pipeline) a mill may shift to the production of a new product if the market is guaranteed.

CHAPTER 4. PARAMETER PROJECTIONS AND POLICY FUTURE

Once the variables describing the policy have been defined, the future of the policy can be determined by projecting the variables and determining the sum of their influences on the policy under consideration. The accuracy of the policy projection then becomes a question of the accuracy of the parameter projections. In several instances, assumptions concerning the projections must be made. The assumptions will be stated in the explanation of the projection of each parameter. In many instances, the use of historic data is valueless due to current economic situations, increases in input costs, investment levels, supply and demand considerations, and unforeseen political developments. All of these factors induce enough error into most traditional projection techniques to make them questionable at best. In view of this fact, the projection technique used will be the examination of historical trends (when applicable), and the consideration of relevant economic and political trends.

Once the projections of the parameters have been made, the effect of the parameter projection on the future of the policy will be discussed. The sum of the parameter effects will determine the future of the policy. The projection for each parameter will be presented graphically and the projected values stated. The future of the policy will be discussed with respect to its continued effectiveness concerning the original objectives of the policy.

Trigger Price Mechanism

The central assumption concerning the projection of the parameters of the TPM is that Japan will remain the most efficient producer of steel among major steel exporting countries. There have been suggestions that if the international exchange rates and input costs shift to favor another country, the calculation base for the TPM should be switched to that country. Although this may become necessary in the future, for the purpose of this thesis Japan will be assumed to continue as the basis for the TPM calculations for the life of the policy. In addition, it is assumed that Japan will continue to pay for its raw material imports in dollars. If payments were shifted to another currency, it would affect the cost of steel production in Japan as denominated in dollars.

Very recent crude oil price hikes by the Oil and Petroleum Exporting Countries (OPEC) cartel has once again boosted the cost of energy significantly. The full impact of the increase at this time cannot be accurately determined. The stated OPEC price ceiling is largely circumvented by OPEC countries wishing to increase prices above the ceiling by adding surcharges to the price per barrel or by diverting their crude oil to the open spot (non-contract) market where the oil can command a price almost double the stated OPEC ceiling. West Germany and Japan, both steel exporters to the U.S., buy oil on the spot market, thereby making it difficult to assess the impact of the OPEC oil price hike.

The method of projecting JSI and USSI cost of production, that is, averaging the 1968-1977 annual percentage increases after eliminating the high and low values, was used based on the inspection of historical data. The decade used exhibited times of high demand (1973-1974), and low demand (1975-1977). Although the U.S. inflation rate is now higher than any time in the 1968-1977 time frame, it can be assumed the inflation rate will fall with the normal business cycle. The 1968-1977 decade also contains the sharp energy cost increases of 1973-1974 which will likely be a major consideration in the future. Therefore, the 1968-1977 decade is the most likely model to approximate the behavior of future JSI and USSI cost of production values.

The JSI Cost of Production

The sharp increase in the cost of energy after 1973 is the major reason for the quickening rate of increase of JSI cost of production. The rate of increase after 1975 exhibits a slowing trend. The rate of increase used to project the JSI cost of production was computed by taking the average of the yearly increases or decreases in the JSI cost of production from 1968 to 1977 after eliminating the high (1974) and low (1968) values. This yielded an annual growth rate of 7.96%. Projected and historical values of the JSI input cost of production are presented in Figure 4-1 and Table A-6.

The Yen/Dollar Exchange Rate

There have been no major adjustments in the JSI cost of production since the implementation of the TPM. The upward adjustments in trigger price levels have been the result of the depreciation of the dollar with respect to the yen. Due to this fact, the yen/dollar exchange rate is a major variable in determining the future of the TPM.

The accurate forecasting of international exchange rates is virtually impossible due to nonquantifiable factors. In an article in Financial World by Jerrold Mitchell and Andre Sharon, the ability to forecast international exchange rates is summarized:

> . . as Jim Burtle of W.R. Grace, who is the dean of foreign exchange forecasting in the United States, points out, no single formula or combination of formulas can expect to capture the essence of the problem. It is not for want of trying. The marketplace has become inundated with formulas ranging from esoteric and highly sophisticated mathematical models, which are incorporated in expensive hard-dollar services, to seat-of-the-pants approaches that border on irresponsible charlatanism.
>
> Aside from the later, there are essentially five ways to forecast foreign exchange parities: 1) purchasing power parity, 2) interest rate differentials, 3) money supply growth (supposdely a leading indicator of future inflation and hence of purchasing power), 4) levels of exchange reserves and 5) any permutation of the preceeding. The problem with these methods is that they are based on the assumption that rational pressures will prevail, so that fundamental forces will dictate equilibrium. This is the way it ought to be, of course, but it would be stupid to base corporate and investment strategies solely on such premises, which may be totally irrelevant in the short run. True professionals know this: the most perceptive foreign exchange forecast I have come across was in FIANANCIAL WORLD in December, 1976. A Swiss banker was being interviewed by the editor, who asked him for his views on the outlook for the Swiss franc in 1977. The banker's reply (slightly paraphrased): "It is overvalued by 50%. And it is going higher."

> And what is the "essence of the problem" that determines a currency's value? Supply and demand. Hence the absurdity of a mechanistic approach, which can be correct but irrelevant. Armchair theoreticians may loath to admit it, but in this field, too, the nose of a good trader is infinitely preferable to all the formulas in the world.[44]

Even with the inability to forecast the international exchange rate accurately, there are indicators that the dollar will strengthen in the near future.

> The fact that the dollar has fallen in the past does not foreordain that it will continue to fall. "The markets have discounted as bad a scenario as I can envisage," says Alan Greenspan, former chairman of the Council of Economic Advisers. "What we are seeing in the forward markets is an expectation for exchange rates that is not reasonable. The U.S. will do so much better than now expected by the markets that the dollar will be a good deal stronger in a few years than it is today.[45]

It is assumed the yen/dollar exchange rate will rise at a rate of 10 yen per year until 1985, when the yen/dollar exchange rate will be 275. Historical and projected values for the yen/dollar exchange rate are presented in Figure 4-2.

USSI Input Cost of Production

The increase in the price of oil in 1974 caused a subsequent significant jump in the cost of steel production. The rate of increase for the projection of the USSI cost of production is derived in the same manner as the JSI input cost of production increase rate. The annual rate of increase thus computed for the USSI input cost of production is 9.35%. Historical and projected data are presented in Figure 4-3 and Table A-10. When compared graphically, the ever widening gap between USSI and JSI input cost of production is evident. This trend is illustrated in Figure 4-4.

JSI Export Price to the U.S.

The JSI export price to the U.S. will begin to deviate from the USSI price level by the end of 1979 or 1980 by a visible amount (over 3%). As the TPM is forced downward by the strengthening of third world steel markets for JSI steel goods, the TPM will fall more than 5% below the USSI prices. The ratio of the TPM level/JSI input cost of production for 1978 was 2.56. This ratio is assumed to prevail in the future. The direct effect of the yen/dollar rate on the TPM is approximately two-thirds to one. That is to say, a 1% increase in the yen/dollar rate creates a 2/3% rise in the

TPM.[46] In addition, a 1% decrease in the 5-year moving average of JSI capacity utilization, which is used to compute the TPM, increases the TPM by approximately $1.33.[47] The newly negotiated contracts for labor in the JSI reveal a 5% increase. The input cost for iron ore and fuel also posted increases.[48] The assumption is made that the sum of the effects of the yen/dollar rate, the 5-year moving average of the JSI capacity utilization rate will equal the full effect of the yen/dollar exchange rate. Therefore, the formula for computing the TPM is:

JSI Cost of Production x 2.56 x (1.00-yen/dollar change)

example: for 1979

$$\text{TPM} = 192 \times 2.56 \times 0.977 = 481$$

The JSI export price will follow the TPM until the TPM is over 5% below USSI domestic prices, which are assumed to grow at an annual rate of 9.35%. The JSI export price to the U.S. will remain approximately 6% below USSI domestic prices while the TPM continues to fall. This is demonstrated in Figure 4-5. Figure 4-6 is a 1978-1985 magnification of Figure 4-5.

Profitability of the USSI

Profitability of the USSI is a function of capacity utilization rate. A high capacity utilization rate (85%+) will be supported through 1979. After 1979, the exchange rate depreciation of the dollar and slower rising JSI cost of production will cause the TPM to be lowered to the extent of a greater than 5% divergence from U.S. domestic prices which will make JSI products attractive to the U.S. customer. The JSI share of the U.S. domestic steel market would then stabilize and then start to grow. Historical and projected values of the profitability of the USSI is presented in Figure 4-7.

Total U.S. Steel Mill Product Imports

Total U.S. steel mill product imports will decrease in 1979 to 1982 to approximately 17-million net tons per year. Thereafter, export levels of steel mill products to the U.S. will begin to climb slowly, reaching the 18.5-million net tons per year level by 1985, due to the lowering of the TPM levels. Historical and projected values for total U.S. steel mill product imports are presented in Figure 4-8.

The sum of the parameters involved in the forecasting of the TPM is presented in Table 4-1.

Table 4-1.

Trigger Price Mechanism Summary

	(1)		(2)		(3)		(4)	
Year	A	B	A	B	A	B	A	B
1978	178		210		320		461	
1979	192	+7.96	215	+2.4	350	+9.35	504	+9.35
1980	207	+7.96	225	+4.7	382	+9.35	551	+9.35
1981	224	+7.96	235	+4.4	418	+9.35	603	+9.35
1982	242	+7.96	245	+4.3	457	+9.35	659	+9.35
1983	261	+7.96	255	+4.1	500	+9.35	721	+9.35
1984	282	+7.96	265	+3.9	547	+9.35	788	+9.35
1985	304	+7.96	275	+3.8	598	+9.35	862	+9.35

A - Parameter value
B - Percent increase (+) or decrease (-) of parameter value from previous year

(1) - The JSI Cost of Production
(2) - The Yen/Dollar Exchange Rate
(3) - The USSI Input Cost of Production
(4) - USSI Domestic Steel Price
(5) - JSI Export Price to the U.S.
(6) - Profitability of USSI
(7) - Total U.S. Steel Mill Product Imports
(8) - Trigger Price Mechanism Level

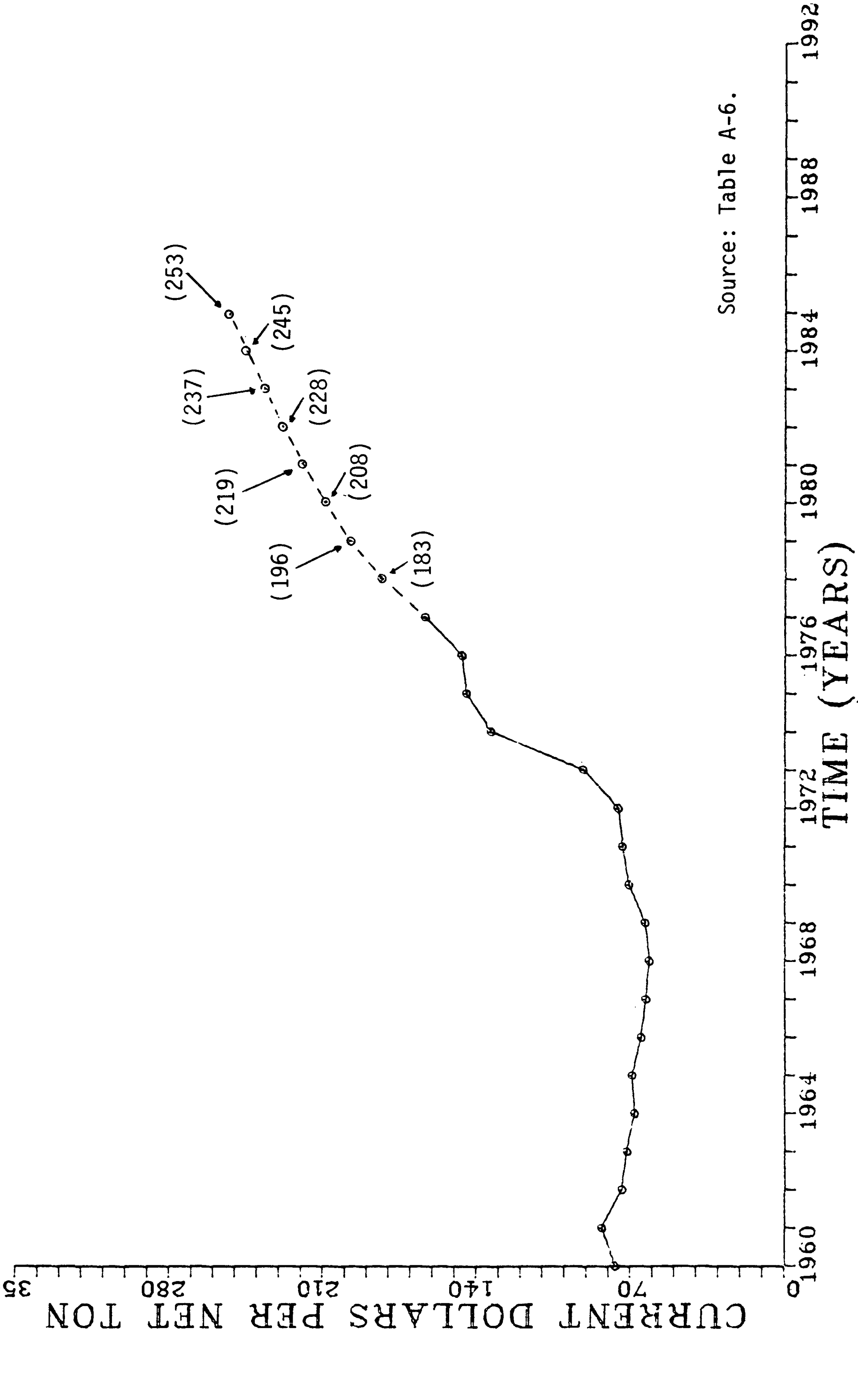
Table 4-1. (continued)

	(5)		(6)		(7)		(8)	
Year	A	B	A	B	A	B	A	B
1979	481	+5.5	9.5	+4.4	18.0	-17.2	481	+5.5
1980	518	+7.7	9.2	-3.2	17.0	-5.6	505	+5.0
1981	567	+9.5	8.9	-3.3	17.0	0.0	548	+8.5
1982	619	+9.1	8.6	-3.4	17.0	0.0	593	+8.2
1983	678	+9.5	8.3	-3.5	17.5	+3.2	641	+8.1
1984	741	+9.3	8.0	-3.6	18.0	+2.9	694	+8.3
1985	810	+9.3	7.7	-3.8	18.5	+2.8	748	+7.8

Units of measurement

(1) - Current dollars per net ton
(2) - yen per dollar
(3) - Current dollars per net ton
(4) - Current dollars per net ton
(5) - Current dollars per net ton
(6) - Profit as a percent of stockholders equity (after tax)
(7) - Millions of net tons
(8) - Current dollars per net ton

JSI INPUT COST OF PRODUCTION PER NET TON



Source: Table A-6.

Figure 4-1.

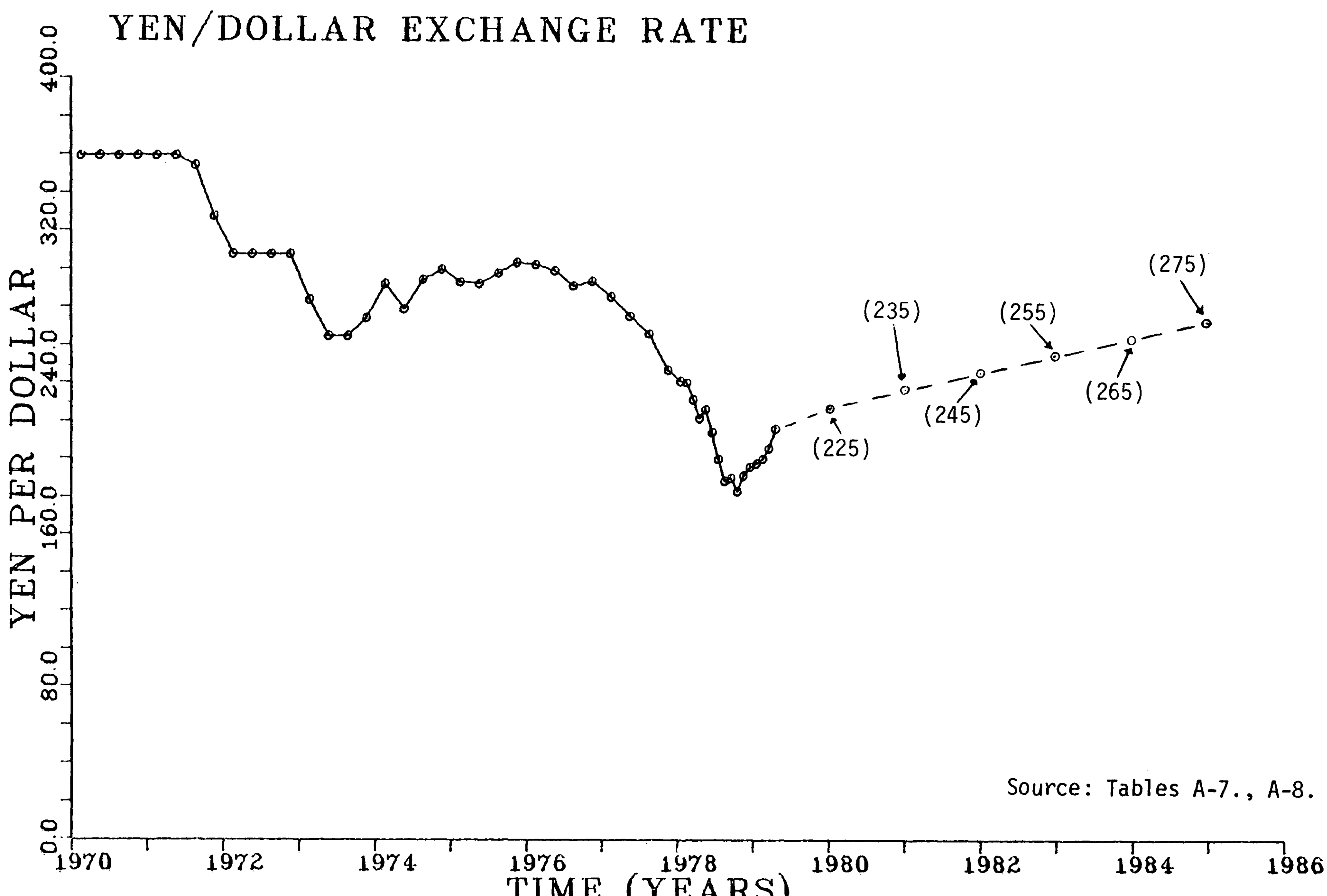
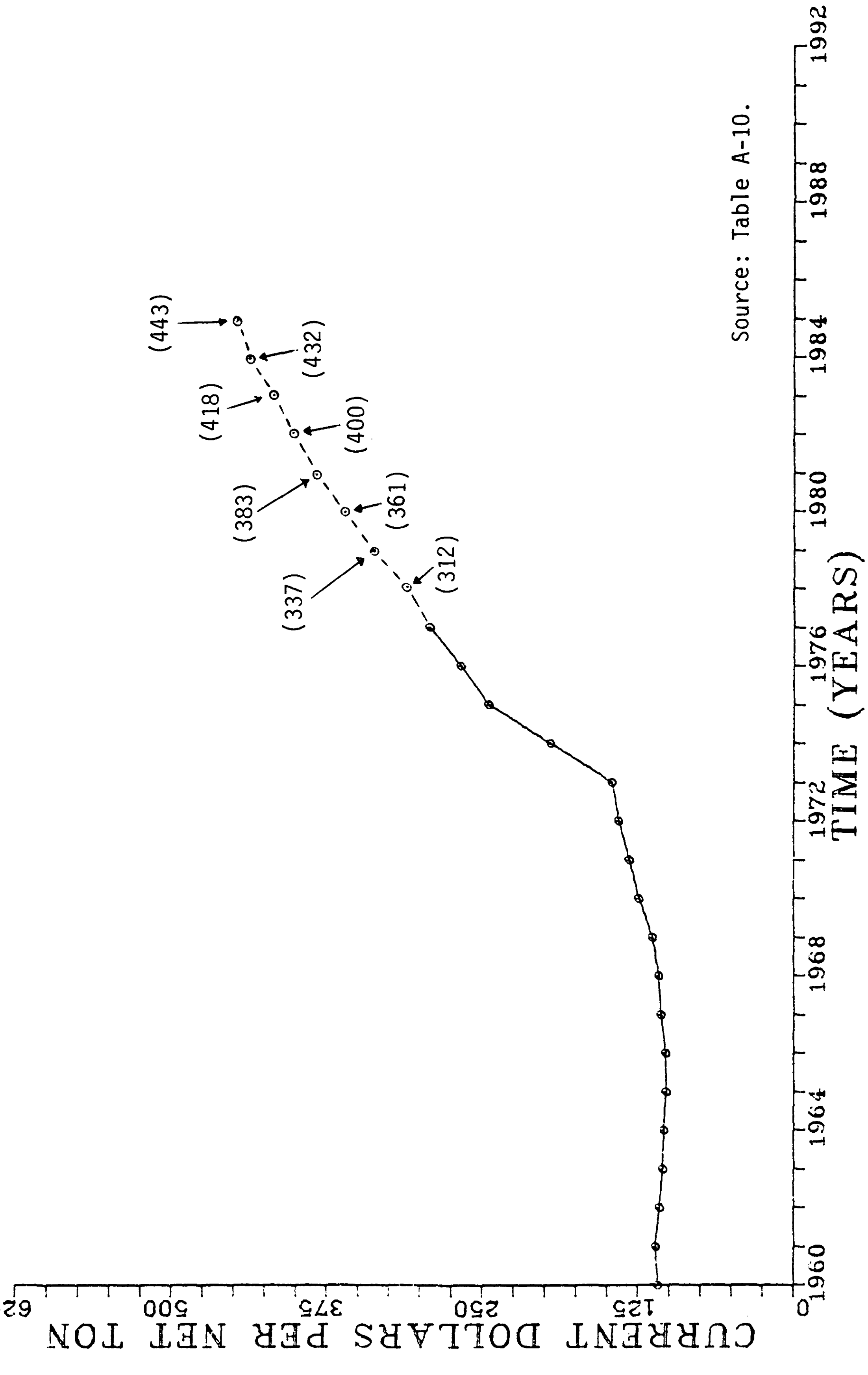

YEN/DOLLAR EXCHANGE RATE
YEN PER DOLLAR
400.0
320.0
240.0
160.0
80.0
0.0
1970
1972
1974
1976
1978
1980
1982
1984
1986
TIME (YEARS)
(225)
(235)
(245)
(255)
(265)
(275)
Source: Tables A-7., A-8.

Figure 4-2.

USSI INPUT COST OF PRODUCTION PER NET TON



Source: Table A-10.

Figure 4-3.

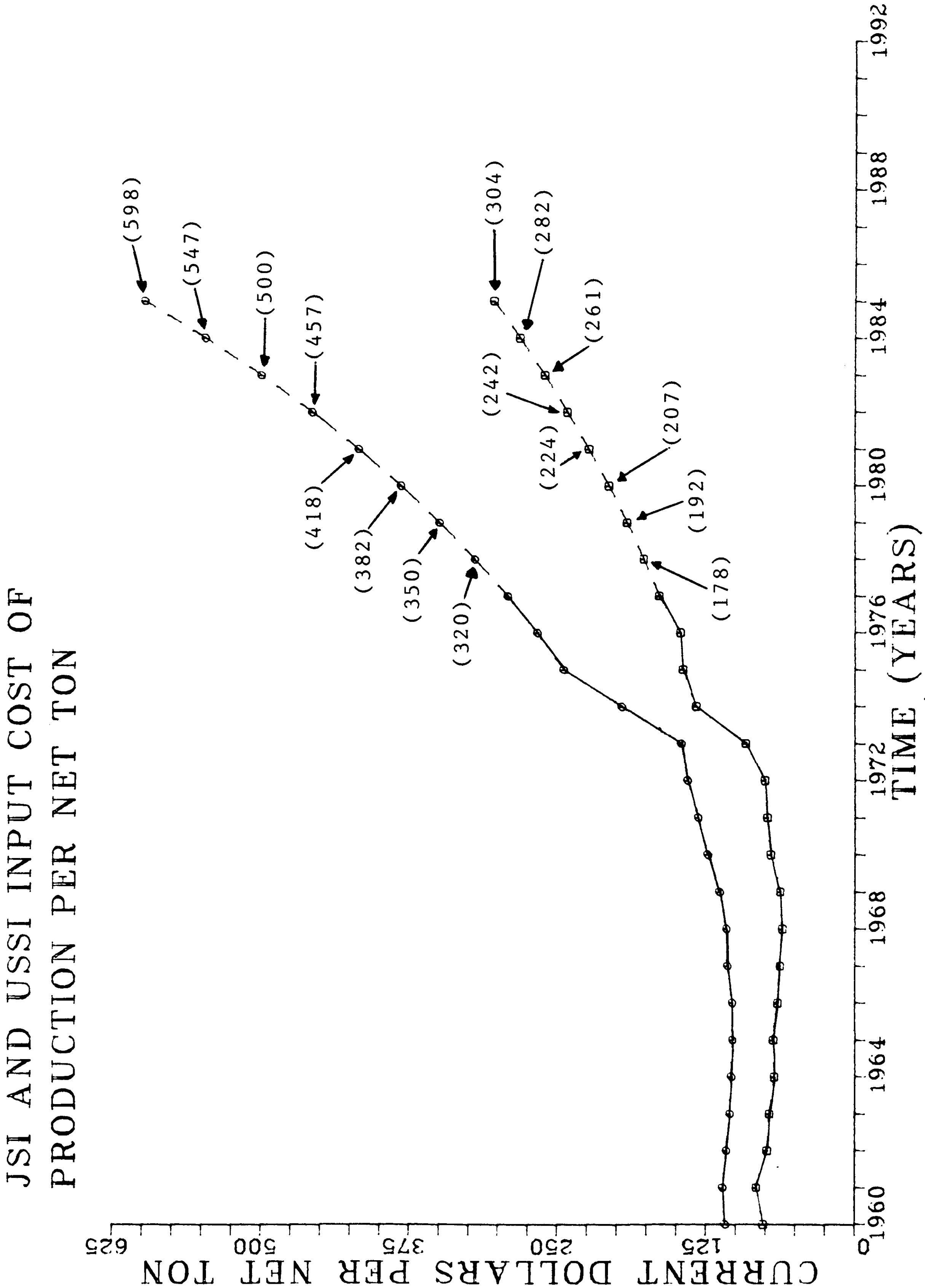

JSI AND USSI INPUT COST OF
PRODUCTION PER NET TON
CURRENT DOLLARS PER NET TON
0
125
250
375
500
625
TIME (YEARS)
1960
1964
1968
1972
1976
1980
1984
1988
1992
(598)
(547)
(500)
(457)
(418)
(382)
(350)
(320)
(304)
(282)
(261)
(242)
(224)
(207)
(192)
(178)

Figure 4-4.

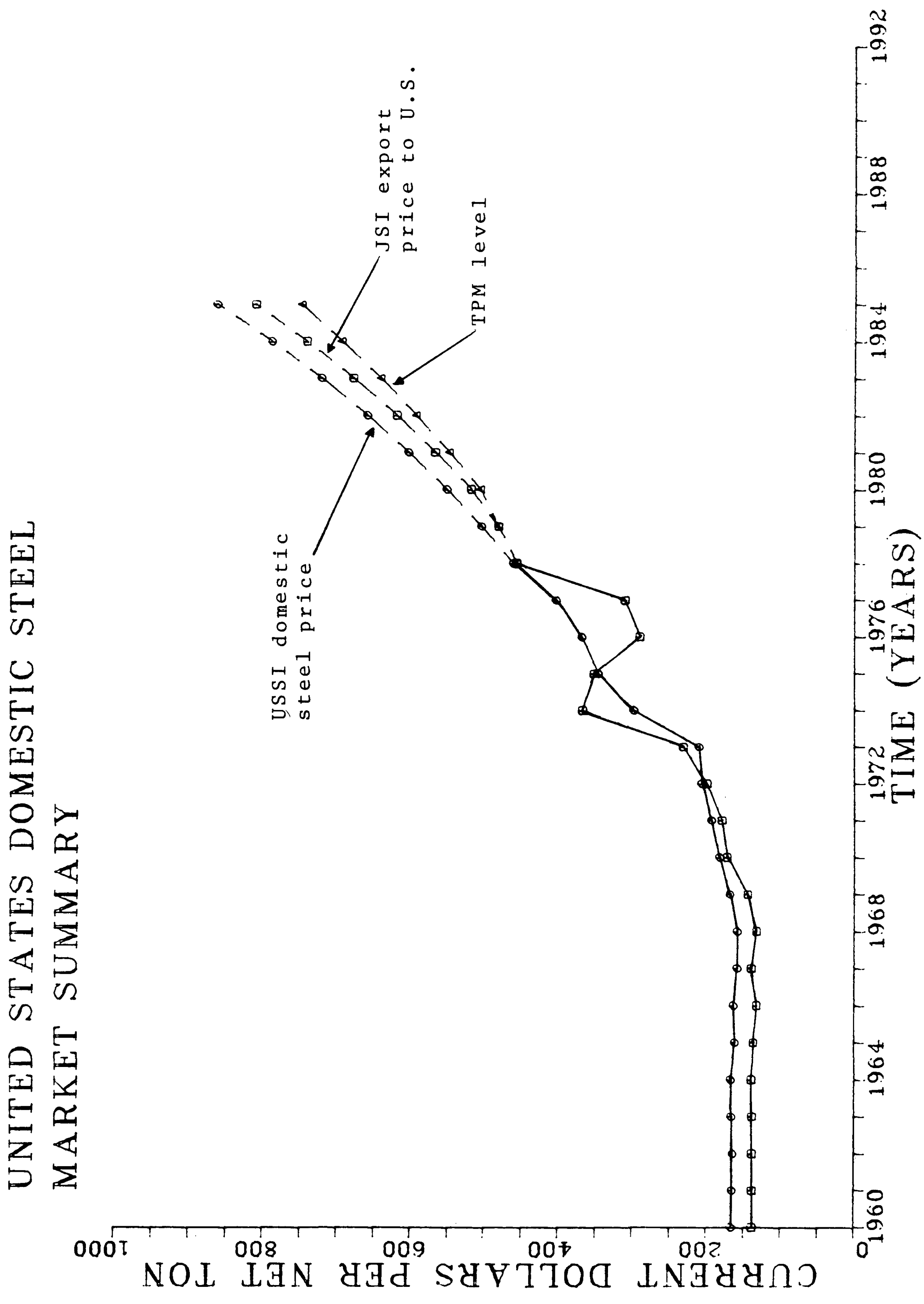

UNITED STATES DOMESTIC STEEL
MARKET SUMMARY
CURRENT DOLLARS PER NET TON
0
200
400
600
800
1000
TIME (YEARS)
1960
1964
1968
1972
1976
1980
1984
1988
1992
JSI export
price to U.S.
TPM level
USSI domestic
steel price

Figure 4-5.

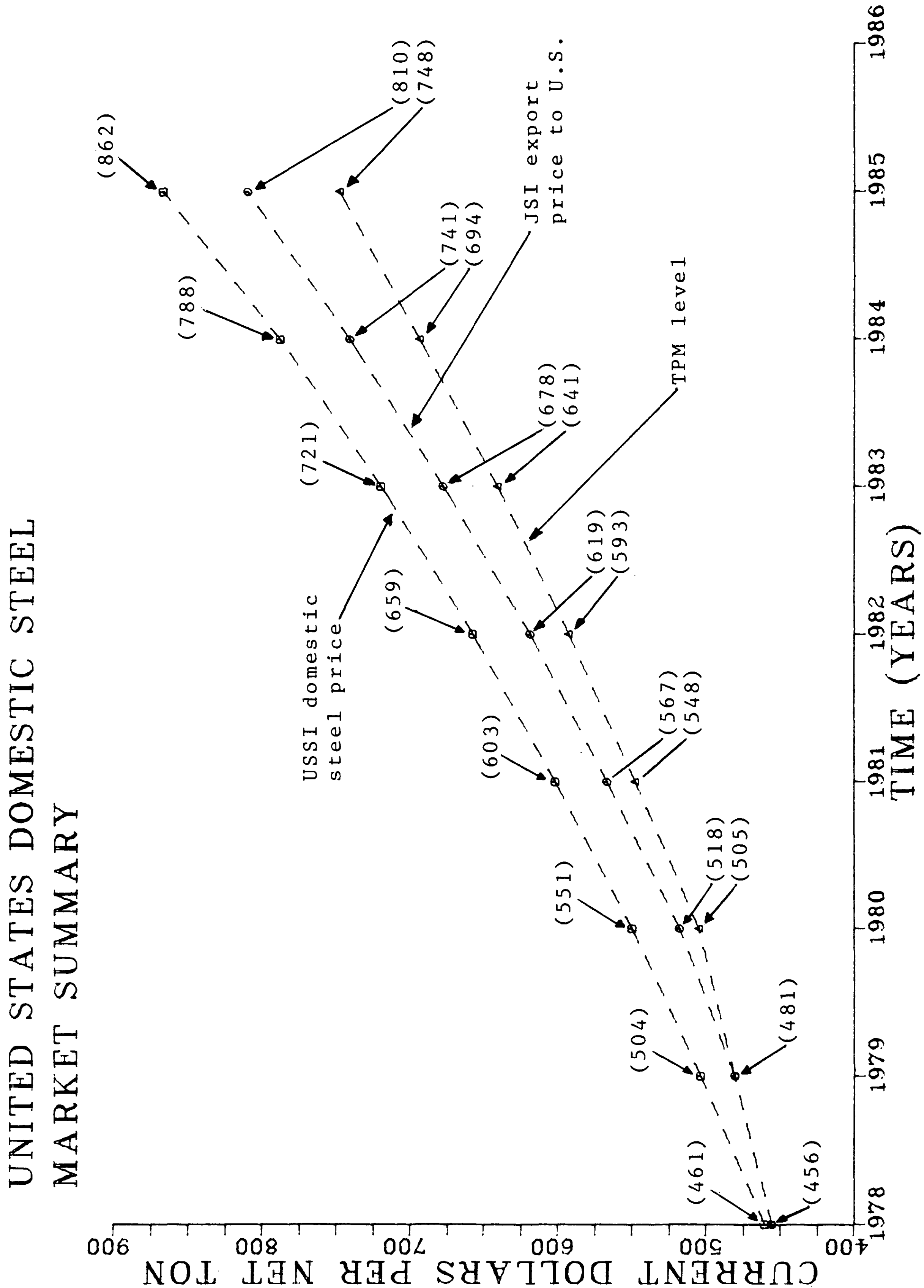

UNITED STATES DOMESTIC STEEL MARKET SUMMARY
CURRENT DOLLARS PER NET TON
TIME (YEARS)
400
500
600
700
800
900
1978
1979
1980
1981
1982
1983
1984
1985
1986
USSI domestic steel price
JSI export price to U.S.
TPM level
(461)
(456)
(504)
(481)
(551)
(518)
(505)
(603)
(567)
(548)
(659)
(619)
(593)
(721)
(678)
(641)
(788)
(741)
(694)
(862)
(810)
(748)

Figure 4-6.

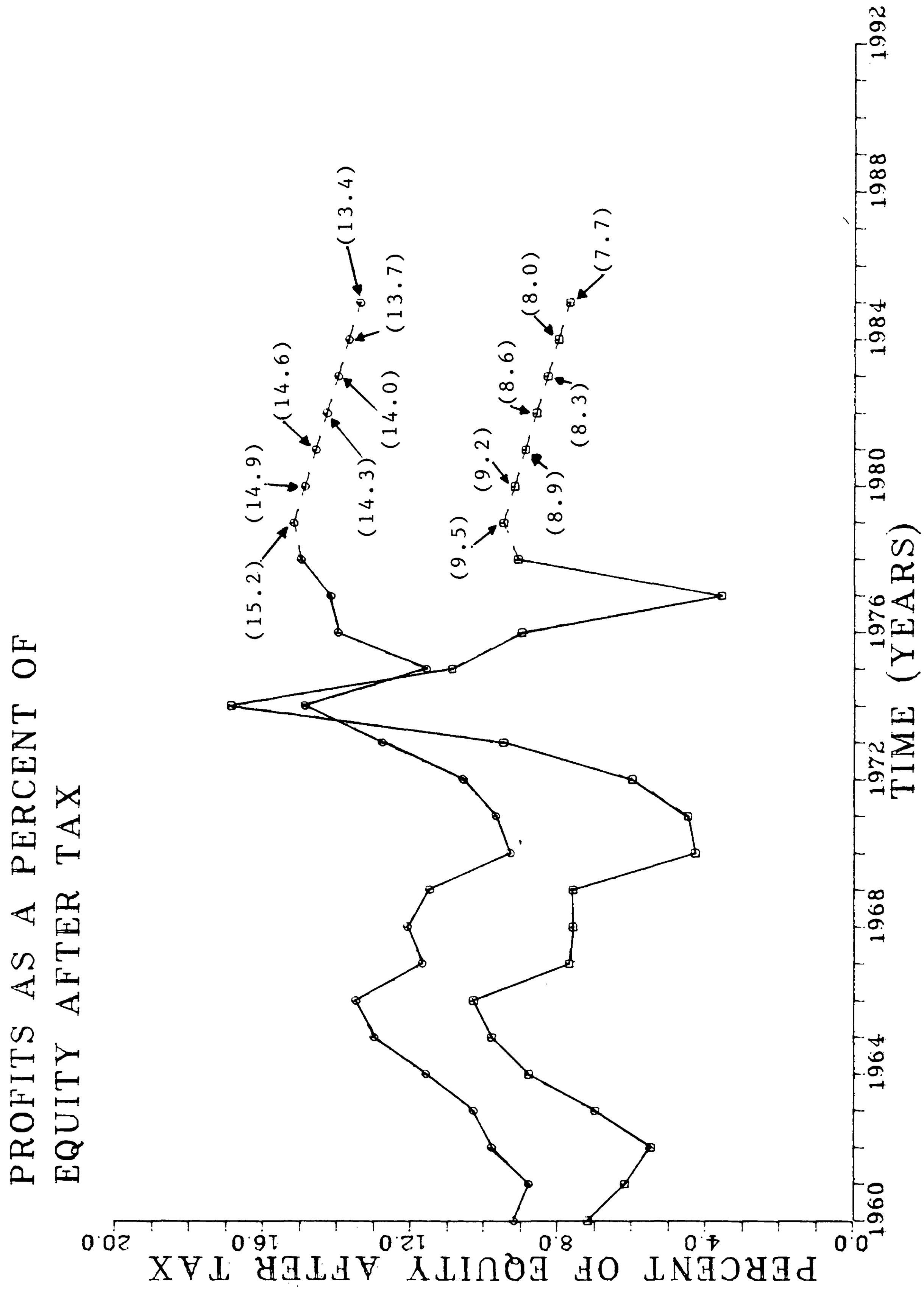

PROFITS AS A PERCENT OF
EQUITY AFTER TAX
PERCENT OF EQUITY AFTER TAX
0.0
4.0
8.0
12.0
16.0
20.0
TIME (YEARS)
1960
1964
1968
1972
1976
1980
1984
1988
1992
(15.2)
(14.9)
(14.6)
(14.3)
(14.0)
(13.7)
(13.4)
(9.5)
(9.2)
(8.9)
(8.6)
(8.3)
(8.0)
(7.7)

Figure 4-7.

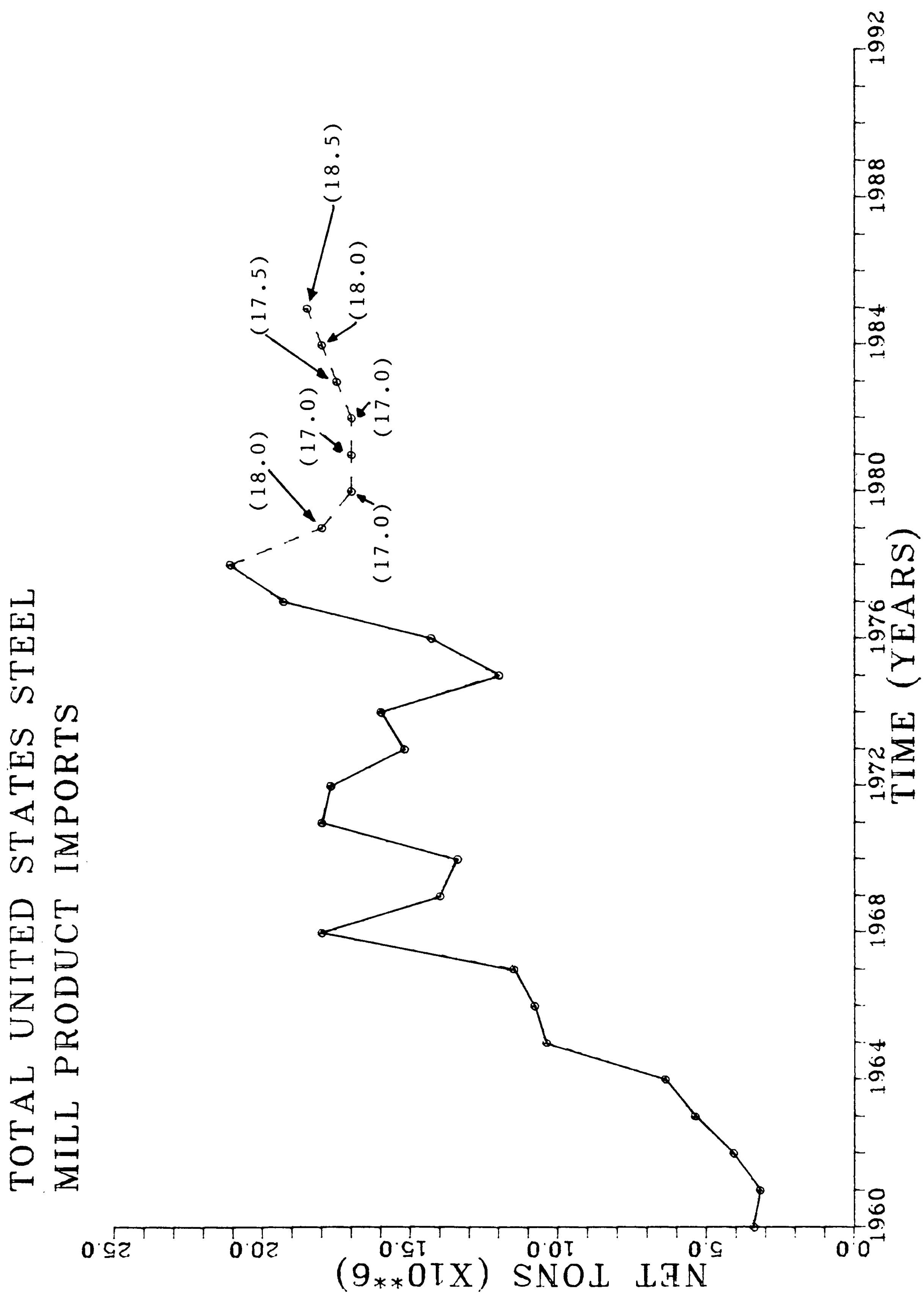

TOTAL UNITED STATES STEEL
MILL PRODUCT IMPORTS
NET TONS (X10**6)
0.0
5.0
10.0
15.0
20.0
25.0
TIME (YEARS)
1960
1964
1968
1972
1976
1980
1984
1988
1992
(18.0)
(17.0)
(17.0)
(17.0)
(17.5)
(18.0)
(18.5)

Figure 4-8.

Trigger Price Mechanism Future

Although the TPM was conceived as a short run measure, leaders of the U.S. steel industry have begun to see the program as lasting several years.[49] The TPM proves to be very beneficial to the USSI when the yen/dollar exchange rate is hovering around the 200 mark. The situation will reverse itself when the dollar strengthens with respect to the yen, driving the TPM downward, possibly below U.S. domestic steel prices.

With the JSI input costs rising at a slower rate than in the U.S., and the low yen/dollar exchange rate aiding in input cost expenditures for the JSI, a stable or downward trend in the TPM is possible. The JSI is currently in a self-restraint program, operating at approximately 72% of capacity.[50] As production rates rise through increased demand in the Japanese domestic or export markets, productivity increases and unit production costs go down, causing possible reductions in the TPM. The third quarter 1979 TPM levels show a decrease of 1.4 percent from the second quarter due to the strengthening of the U.S. dollar.[51] The reduction of approximately $19 per ton in the TPM has been protested by the AISI.

The TPM, being above the normal export price levels of JSI steel mill products, has caused Japan to loose formerly secure U.S. customers. The trend will continue until the TPM is revised downward to a level more than 5% below U.S. domestic prices. As the USSI input costs continue to rise at a faster rate than JSI input costs, and the dollar strengthens with respect to the yen, political pressures will be brought to bear for an upward adjustment in the TPM.

With USSI capacity utilization in the 85-95% range, under the TPM, profitability will rise to the vicinity of 9.5% of equity after tax. As the TPM is lowered due to appreciation of the dollar with respect to the yen, lower relative input costs to the JSI, or JSI capacity utilization increases, the level of JSI exports to the U.S. will rise. This will cause the JSI to capture a larger share of the U.S. domestic market. As capacity utilization in the USSI decreases due to reduced domestic markets, profitability will also decrease.

Total U.S. steel mill product imports will begin to decrease in 1979 from an all time high of 21,134,582 net tons in 1978, as the higher TPM prices begin to take hold and stockpiles are depleted. The import level will continue to decline until the TPM is more than 5% below U.S. domestic prices. At the minimum, the total import level will be 16% of U.S. steel mill product supply.

Assuming the most efficient steel producing nation among major exporting countries remains Japan, the yen/dollar exchange rate increases to approximately 275 by 1985, the JSI input cost of production continues to increase at a slower rate than in the U.S., and JSI capacity utilization rate slowly increases due to development of third world markets, the TPM will begin to fall below the U.S. domestic price levels by 5% by 1980. As the TPM falls more than 5% below the U.S. domestic price level, more of the U.S. domestic steel market will be captured by the JSI. Assuming the system of calculation of the TPM does not change, the TPM will be discarded or extensively revised in the early 1980's due to its inability to stem the tide of foreign steel imports to the U.S.

Voluntary Restraint Agreement

The main assumption concerning the VRA is that the major countries exporting steel mill products to the U.S. will be able to reach agreement with the U.S. concerning import levels to be adhered to. Also, it is assumed that a major steel exporting country will not sell steel to a country not specifically governed by the VRA for sale in the U.S., thereby circumventing the VRA.

USSI Raw Steel Capacity

Although various studies of growth in steel demand support a raw steel capacity increase of approximately 30-million tons in the USSI by 1985 (18-million tons brownfield, 12-million tons greenfield), the author does not feel the increase in raw steel capacity will approach 30-million tons.[52] The planned greenfield plant of U.S. Steel located in Conneaut, Ohio, has been termed a "pipedream" by President David M. Roderick, which creates doubt that any smaller steel company could support an integrated greenfield addition of any significant size.[53] Of the 18-million tons of potential brownfield capacity addition, some of the expansion will not take place due to fluctuations in the steel markets, EPA regulations, lack of cash flow, and alternate investment opportunities. The overall maximum potential increase in USSI raw steel capacity by 1985 will be approximately 15-million net tons. Historical and projected values of USSI raw steel capacity are presented in Figure 4-9.

USSI Yield

Yield rate will not increase to a large degree in the USSI due to lack of greenfield additions, and the requirement of retrofitting old facilities to conform to EPA regulations. Due to modernizations and improvements in technology, the yield rate should rise slowly to a 3-year moving average level of approximately 75 percent. Historic and projected values of the 3-year moving average of USSI yield are presented in Figure 4-10.

U.S. Domestic Demand

U.S. domestic demand ahs been projected to increase at a rate of 2.25% per year until 1985[54], somewhat less than the average annual increase over the 1958-1978 time period of 2.8%.[55] Although domestic demand can be erratic, a smooth annual increase of 2.25% will be assumed. Historic and projected values of U.S. domestic steel mill demand are presented in Figure 4-11.

JSI Total Export Level to U.S. (Percent)

The market share (percent) of JSI exports in U.S. domestic consumption will decline slightly by 1985 due to increasing JSI markets in Asia and China. The depressed yen/dollar exchange rate will also cause reduced JSI exports to the U.S. until the early 1980's, when the rate will begin to increase. Therefore, Japan will continue to see a decrease in its share of the U.S. market in 1979, 1980, and 1981, and then a slight rise thereafter to a 3-year moving average level of 43% by 1985. Historic and projected values of the 3-year moving average of the JSI total export level to the U.S. (percent) is presented in Figure 4-12.

JSI Export Product Mix (Percent) to U.S.

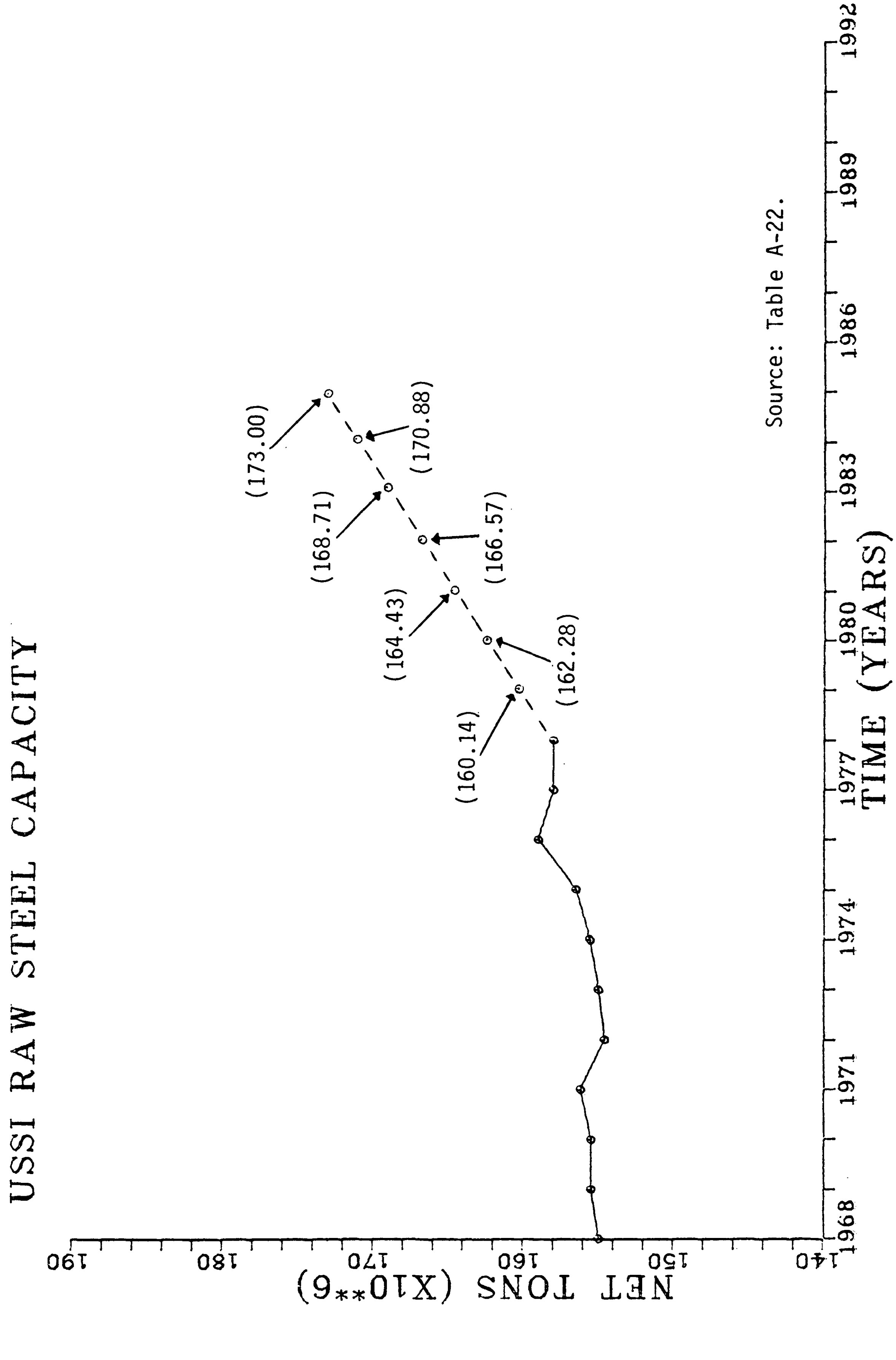
The export product mix of JSI steel mill products to the U.S. have exhibited trends that indicate probable 1985 values of:

Carbon steel:	95.0%
Alloy steel:	3.7%
Stainless steel:	1.3%

Historic and projected values for the 3-year moving average (percent) of carbon, alloy and stainless steel exports the U.S. are presented in Figures 4-13, 4-14, and 4-15.

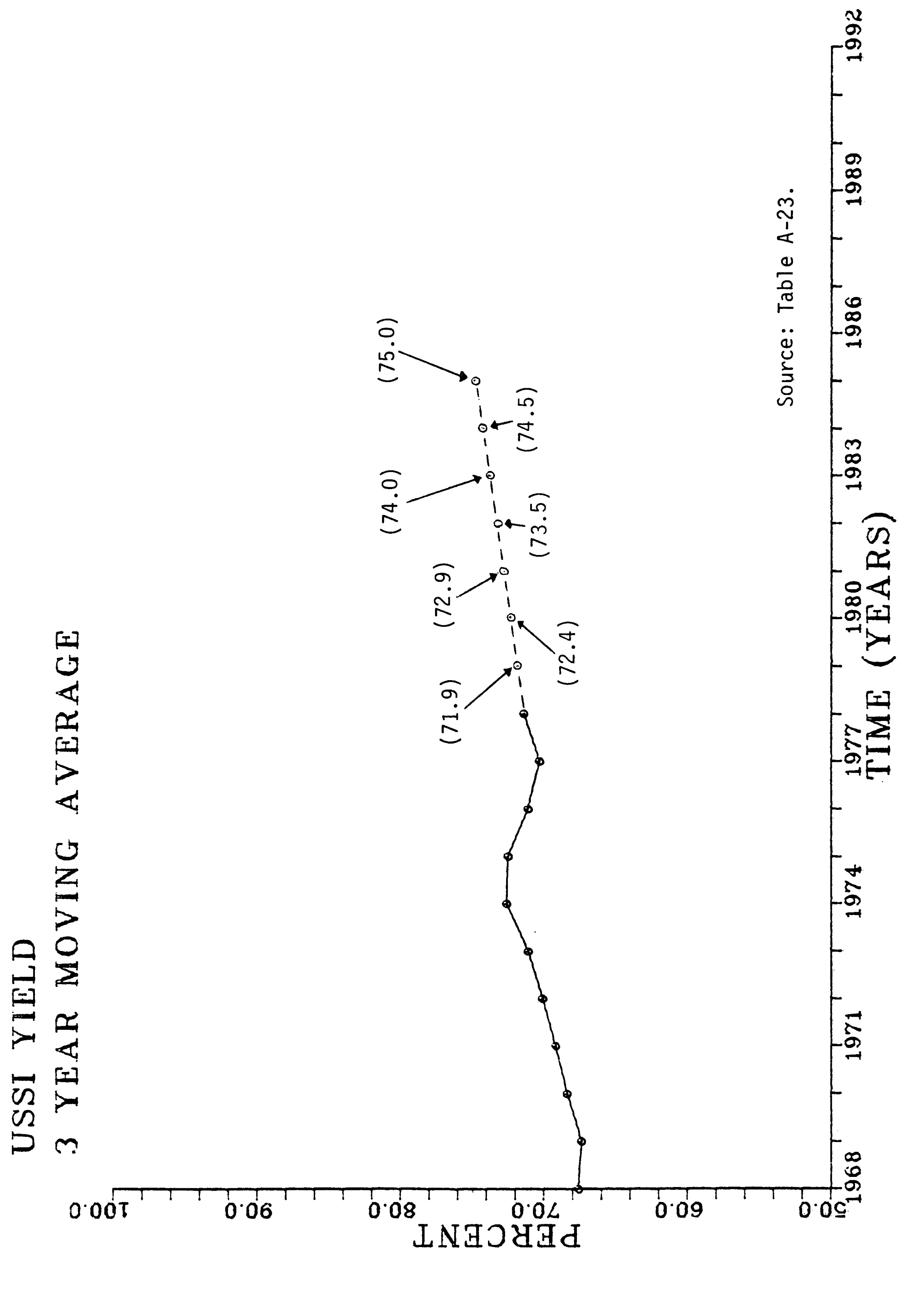
Voluntary Restraint Agreement Future

With the projected steady increase in demand for finished steel products in the U.S., and the inability of the USSI to provide for domestic peak demand, foreign steel



Source: Table A-22.

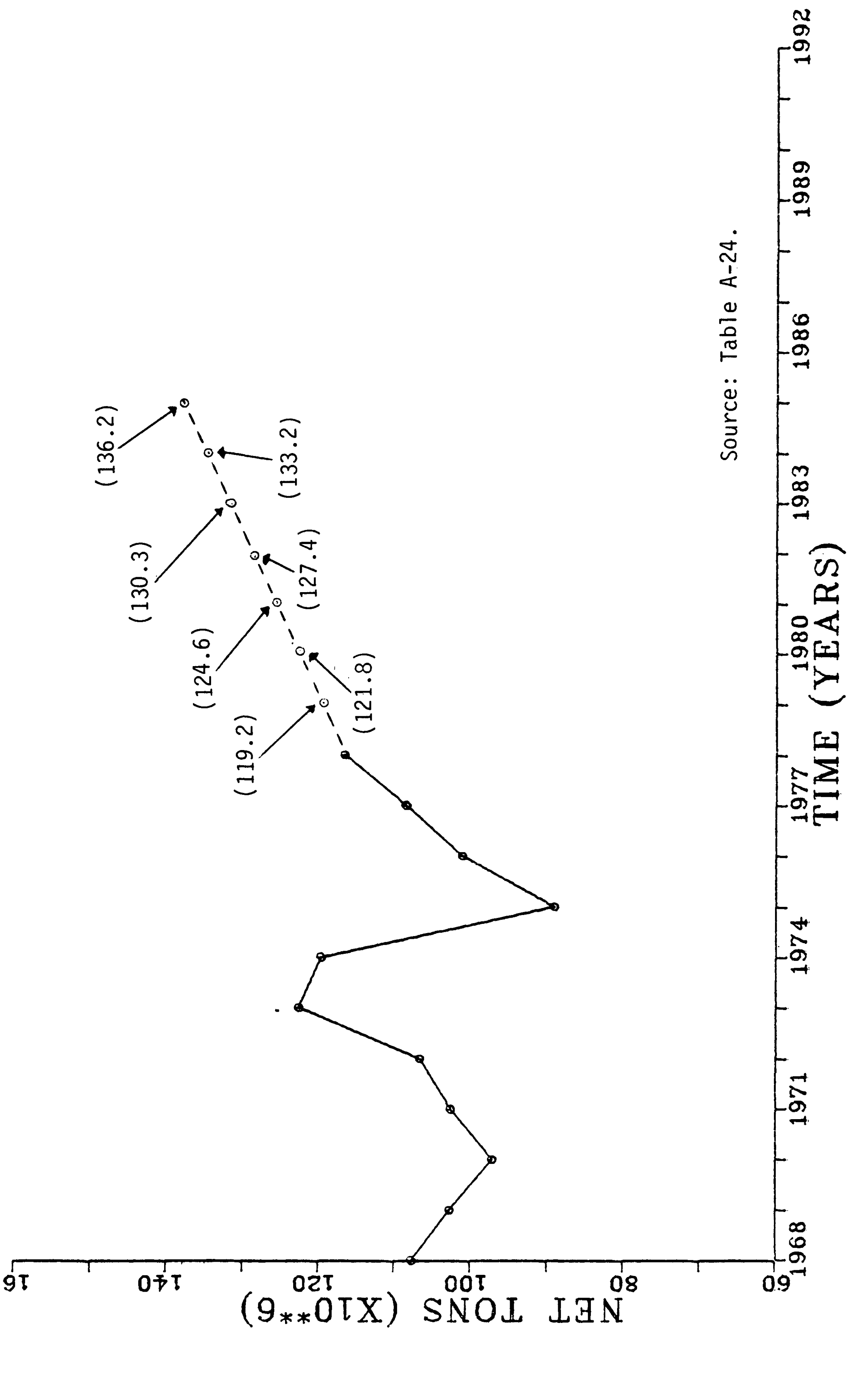
Figure 4-9.



Source: Table A-23.

Figure 4-10.

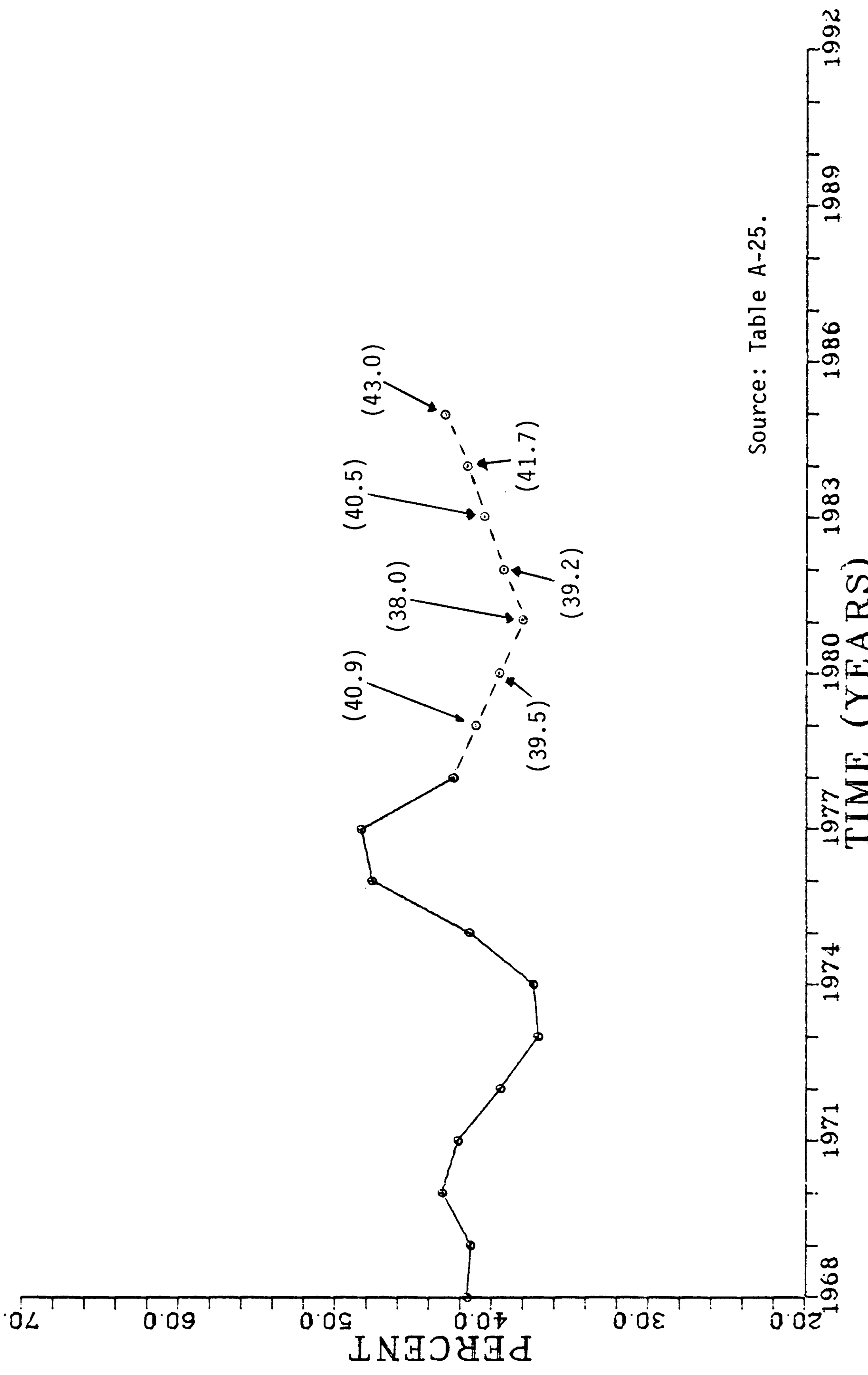
U.S. DOMESTIC STEEL MILL PRODUCT SUPPLY



Source: Table A-24.

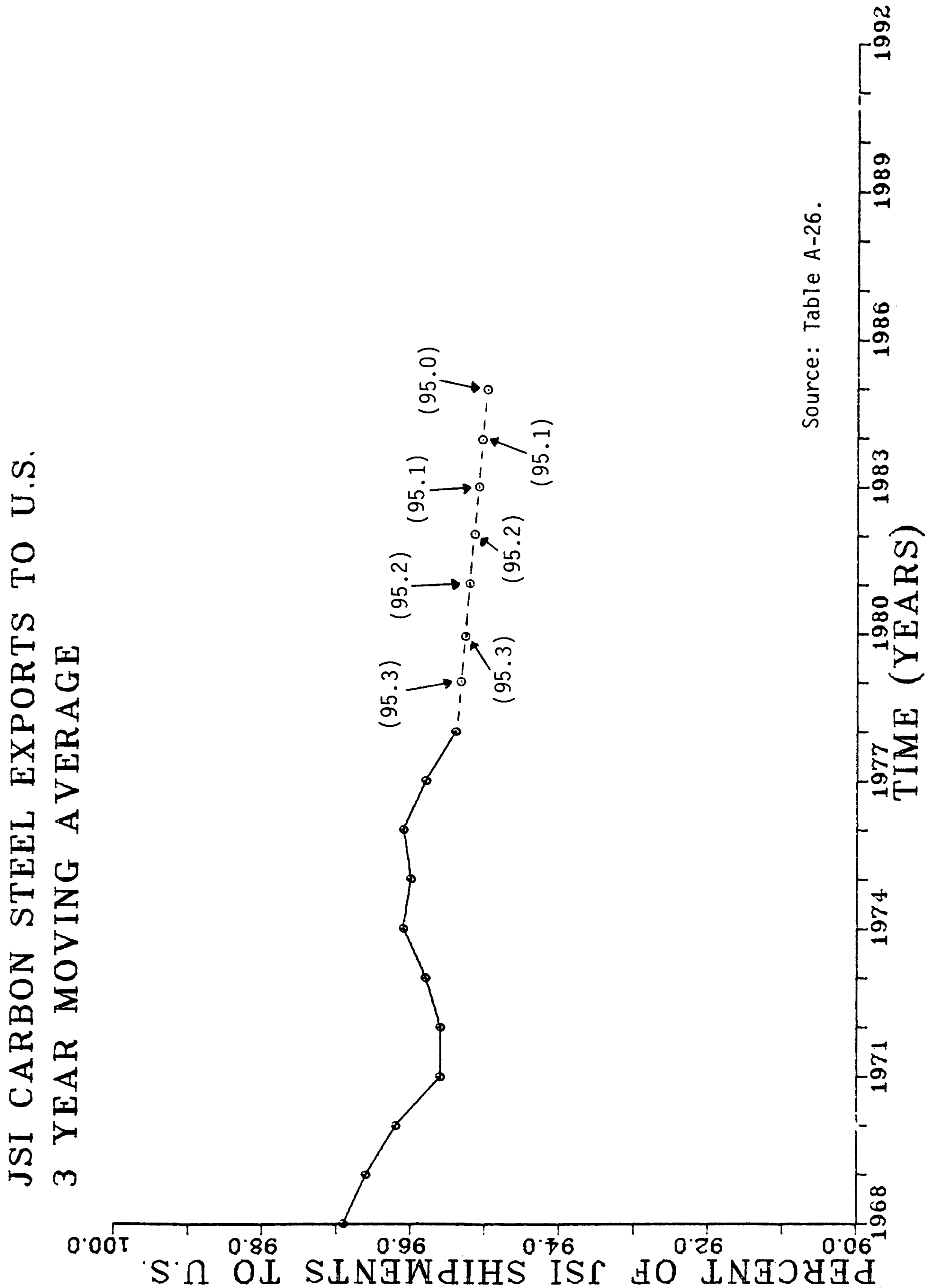
Figure 4-11.

JSI PERCENT OF TOTAL STEEL SHIPMENTS TO U.S.
3 YEAR MOVING AVERAGE



Source: Table A-25.

Figure 4-12.



Source: Table A-26.

Figure 4-13.

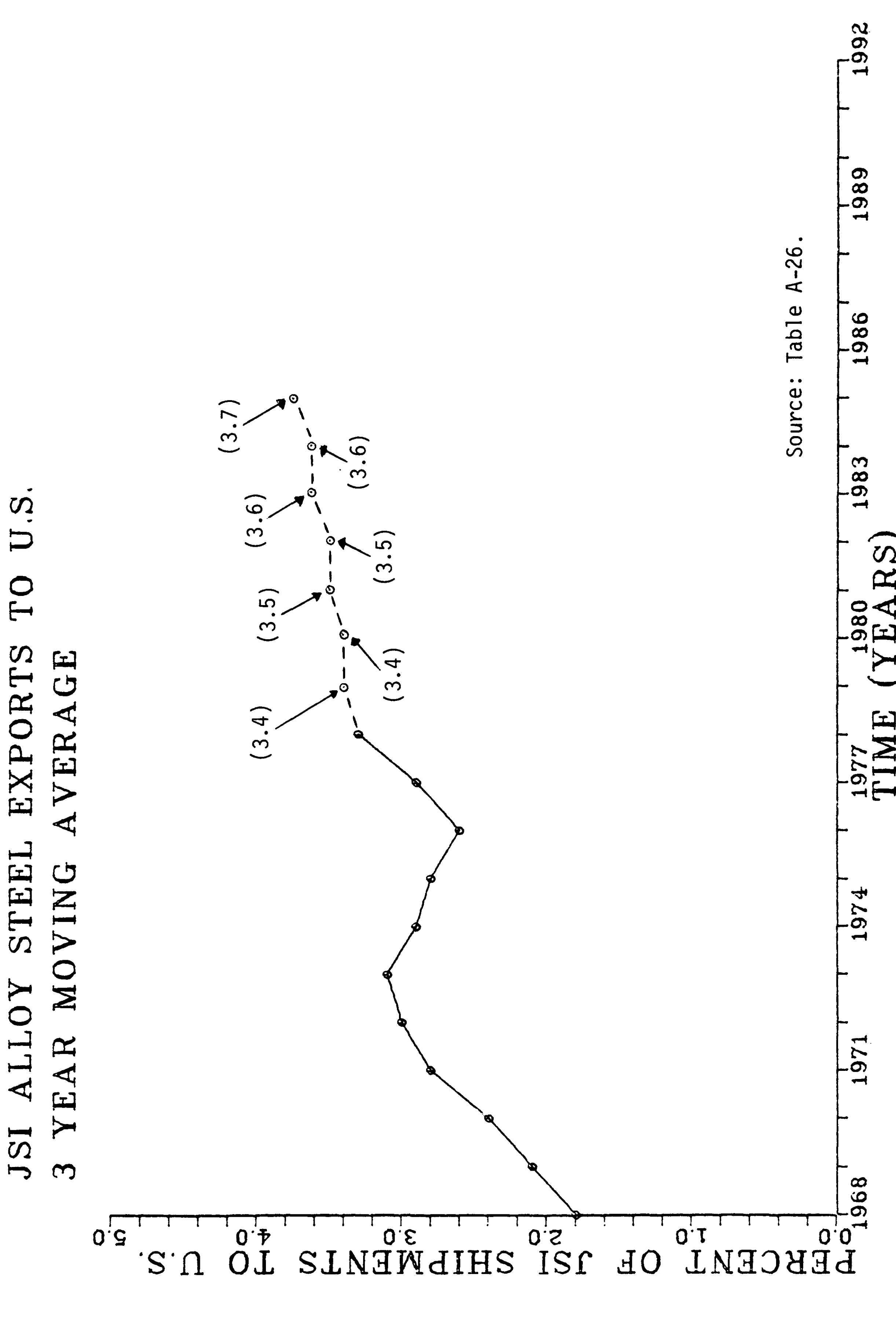
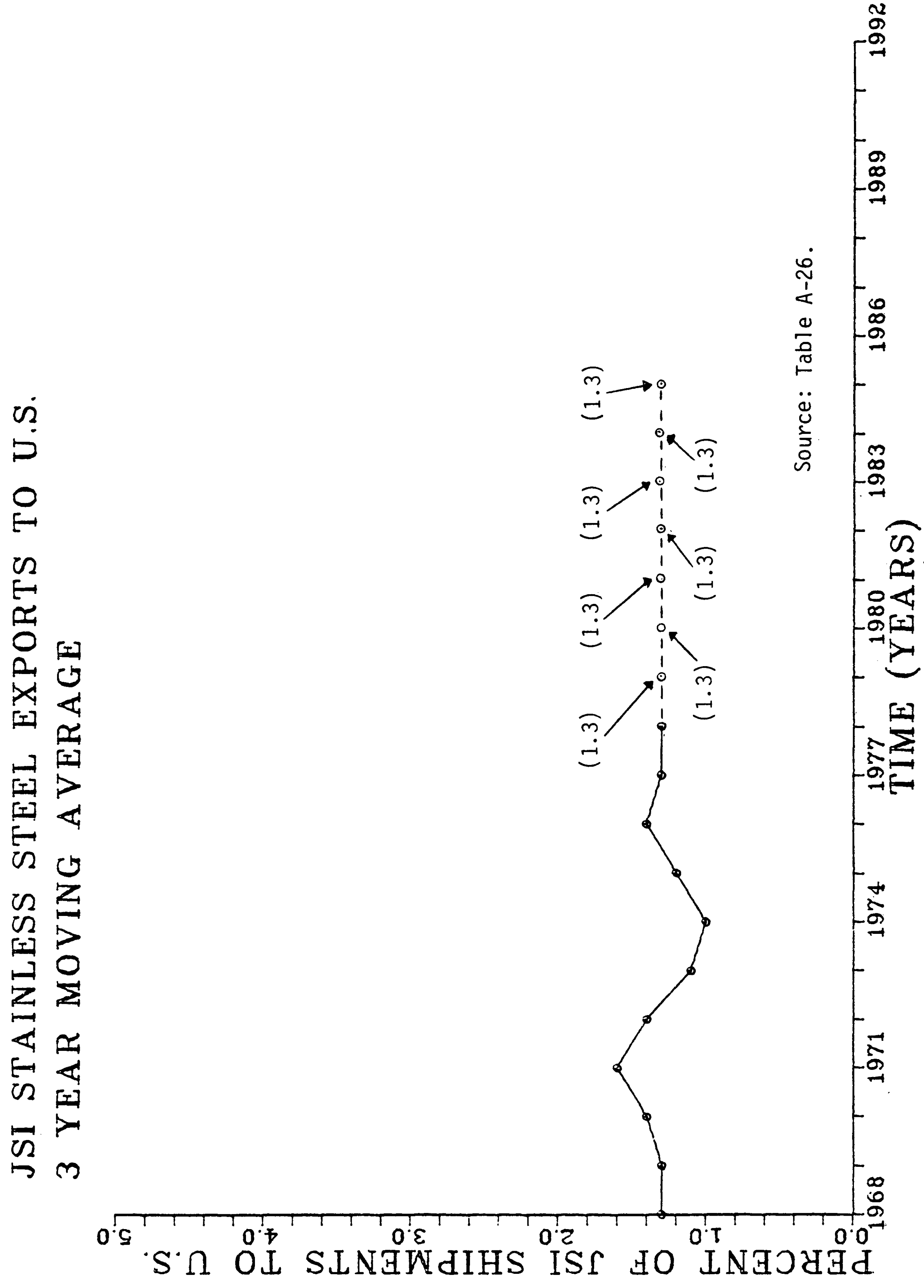

JSI ALLOY STEEL EXPORTS TO U.S.
3 YEAR MOVING AVERAGE
PERCENT OF JSI SHIPMENTS TO U.S.
0.0
1.0
2.0
3.0
4.0
5.0
TIME (YEARS)
1968
1971
1974
1977
1980
1983
1986
1989
1992
(3.4)
(3.4)
(3.5)
(3.5)
(3.6)
(3.6)
(3.7)
Source: Table A-26.

Figure 4-14.



Source: Table A-26.

Figure 4-15.

product imports have become necessary for the continued growth and welfare of the economy of the United States. Since the raw steel capacity increases in the U.S. domestic steel industry will be unable to keep pace with the U.S. domestic demand in the future, the U.S. domestic market will become more dependent upon steel product imports.

In the VRA proposed in Chapter 3, the 3-year moving average employed in the projections of USSI yield, JSI total finished steel exports to U.S. (percent), and JSI export product mix to the U.S. (percent) reduces the disruption of unusually high or low annual export levels, or changes in export product mix. It is necessary to attempt to smooth the peak and valley cycles normally associated with foreign export levels in order to prevent harm to U.S. domestic consumers and producers of steel products.

There is an excellent chance of a VRA type agreement becoming a permanent fixture in U.S. international trade in the near future. The system that is eventually adopted may take the form of individual bilateral agreements between the U.S. and foreign countries, or a universal international agreement through the International Iron and Steel Institute or the Organization for Economic Cooperation and Development (OECD).

Table 4-2 is a sample calculation of the VRA import levels for Japan in 1979. The format followed is that explained in Chapter 3. Tables 4-3 and 4-4 are compilations of the VRA level calculations for 1979-1985.

Internal Policies

The internal policies to be considered (tax modifications, environmental regulation modifications, modifications in management, and changes in output mix) will be assumed to be implemented to attain maximum capital formation potential. As illustrated in Table A-27, there is a wide range of opinions concerning the capital investment and capacity expansion levels in the USSI from 1978 to 1985. For the purpose of this study, the projected capital expenditures will be interpolated from the A.D. Little report.[56] The 15-million net ton capacity increase and projected annual capital expenditures are summarized in Table 4-5. As shown in Table A-28, capital expenditures have not approached the 4.7-billion dollars per year level. The shortage of capital necessary to support the 15-million net ton raw steel capacity increase is approximately 2.0 billion dollars

Table 4-2.

Import Level Sample Calculation

(Million of net tons)

1979

160.14	USSI raw steel capacity
x0.719	Yield
115.141	USSI maximum finished steel capacity
x0.85	Minimum capacity utilization rate
97.870	Minimum USSI finished steel production
119.20	U.S. domestic supply (demand)
-97.870	
21.33	Total finished steel import level
21.33	
x0.409	Projected total import share
8.724	Total Japanese finished steel exports to U.S.
8.724	
x0.953	Percent carbon steel
8.314	Japanese carbon steel export level to U.S.
8.724	
x0.034	Percent alloy steel
0.297	Japanese alloy steel export level to U.S.
8.724	
x0.013	Percent stainless steel
0.113	Japanese stainless steel export level to U.S.

Table 4-3.

United States Projections

Finished Steel

(Millions of net tons)

Year	Maximum Production	Minimum Production	Total Imports
1979	115.1	97.9	21.3
1980	117.5	99.9	21.9
1981	119.9	101.9	22.7
1982	122.4	104.1	23.3
1983	124.8	106.1	24.2
1984	127.3	108.2	25.0
1985	129.7	110.3	25.9

Table 4-4.

Japan Exports to U.S. Projections

Finished Steel

(Millions of net tons)

Year	Total	Carbon	Alloy	Stainless
1979	8.724	8.314	0.297	0.113
1980	8.664	8.256	0.295	0.113
1981	8.630	8.216	0.302	0.113
1982	9.147	8.708	0.320	0.119
1983	9.793	9.313	0.353	0.127
1984	10.421	9.910	0.375	0.136
1985	11.142	10.585	0.412	0.145

Table 4-5.

USSI Capital Expenditure Projections 1978-1985

158.00 Million net tons - USSI raw steel cap. 1978
+15.00 Million net tons - USSI added cap. 1985
173.00 Million net tons capacity 1985

$$\frac{15.00}{158.00} \times 100 = 9.5\% \text{ capacity increase 1978 - 1985}$$

$$\frac{9.5\%}{7 \text{ yrs.}} = 1.36\% \text{ average annual increase}$$

A.D. Little & Co. estimates interpolation (billion 1978$)

Added capacity and modernization

$$\frac{3.9 + 0.36(41.1-32.8)}{8 \text{ yrs.}} = 0.9$$

Replacement

$$\frac{24.0}{8 \text{ yrs.}} = 3.0$$

Environment

$$\frac{5.9 + 0.36(8.0-5.9)}{8 \text{ yrs.}} = \underline{0.8}$$

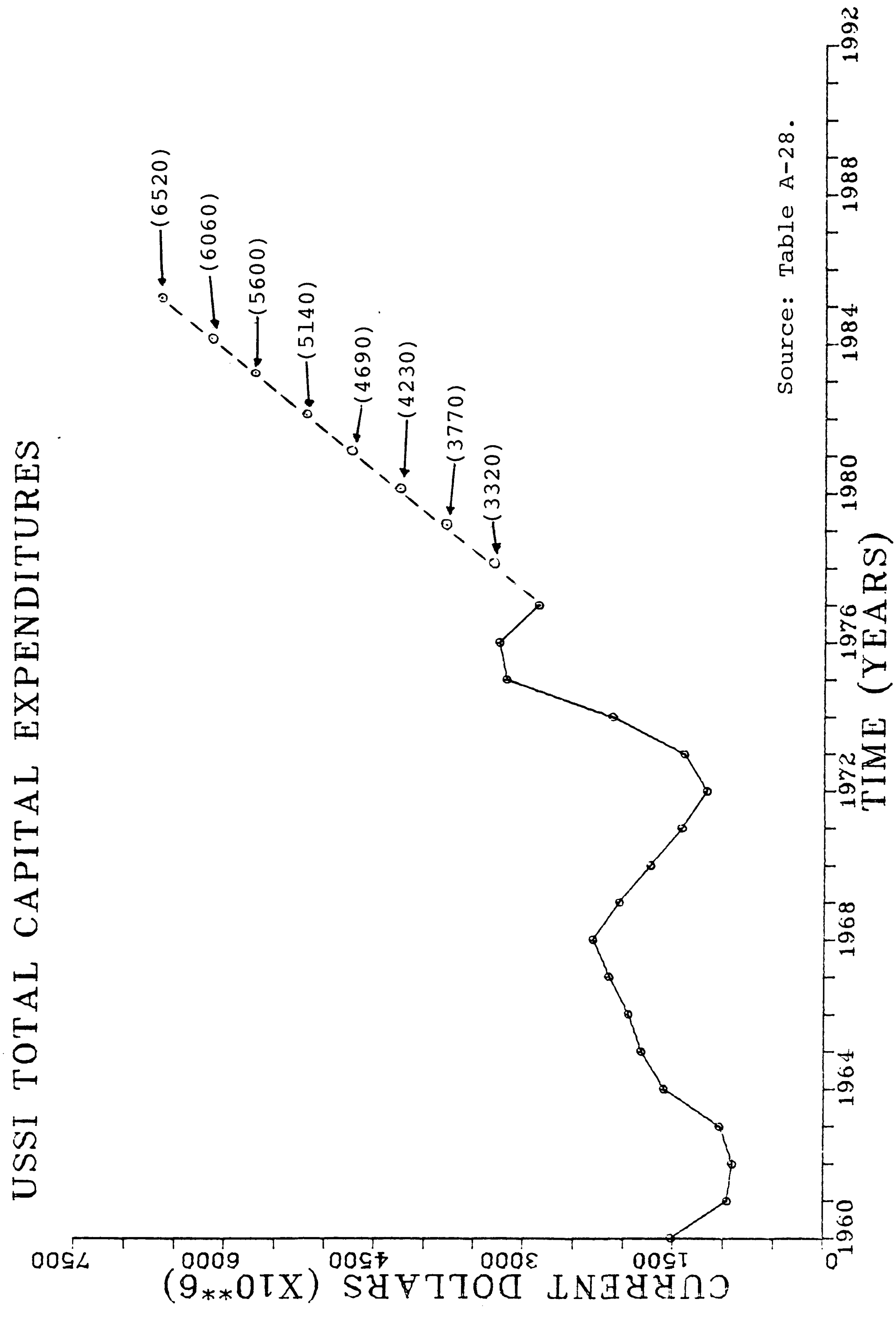
$$4.7$$

Source: Arthur D. Little, Inc., Steel and the Environment, A Cost Impact Analysis, May 1978, p.5.

annually. Capital expenditures will be assumed to rise at a uniform rate from 1979 to 1985 as illustrated in Figure 4-16.

Tax Modifications

The central issue of tax modifications is the time value of money. In time of inflation, the time value of money becomes critical in investment and expenditure decisions. The basic problem in the U.S., as in many other manufacturing industries, is the difference between cost incurement and cost recovery. If all costs were recovered at the time of incurement (expensed), no inflation adjustment would be required.[57] The current system of accounting practices in the U.S. enables recovery of the original dollar amount of the depreciable expenditure in current dollars. This disregards the time value of money since, due to inflation, the replacement cost of the item would exceed the amount accrued in current dollars under depreciation. Therefore, the soundest economic policy to follow would be to recover the depreciation allowances as quickly as possible in order to minimize the effects of inflation. Currently in the U.S., using the asset depreciation range (ADR) system and the investment tax credit (ITC), it is possible to



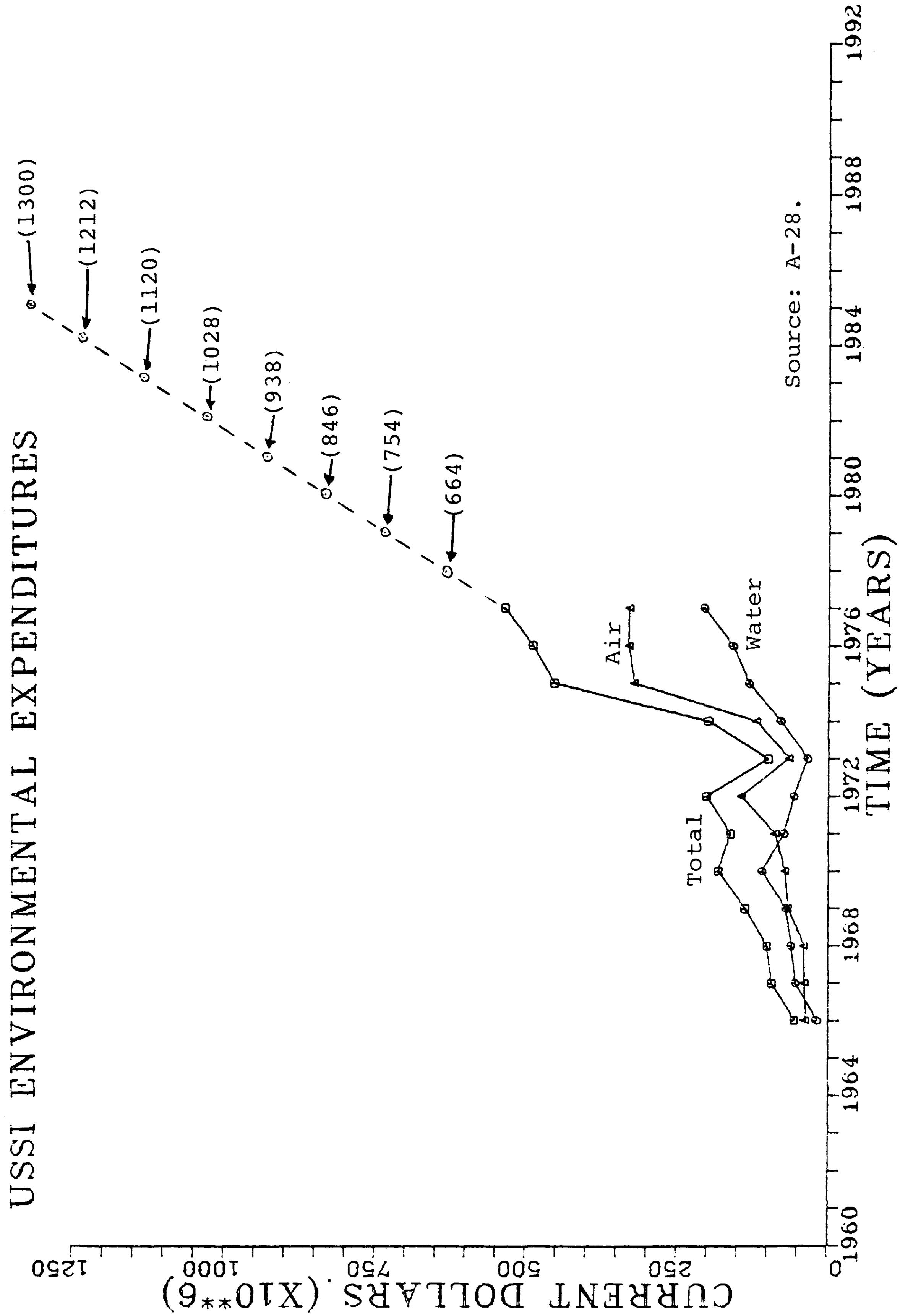
Source: Table A-28.

Figure 4-16.

recover the fundamental value of capital investments during the first three years.[58] The reduction of the guideline life from 18 to 15 years would enable the quicker recovery of the cost of an investment, thereby aiding in cash flow.

It is assumed expenditures for pollution control will account for 20% of future capital expenditures. The historic trend and predicted values are presented in Figure 4-17. Capital expenditures to protect the environment are nonproductive in that the equipment and installations purchased do not aid in the production of more steel, or income. In addition, the annual operating and maintenance expenditures equal 10 to 12 percent of original installation costs.[59] Currently, the expenditures for pollution can be amortized in 5 years. It is the feeling of the USSI that since the expenditures for environmental control do not result in productive capital assets and the benefits are distributed to society in general, the costs incurred for environmental control should be permitted to be expensed as they are incurred.

By inspection of the history of the investment tax credit, a 2% increase would translate to slightly over a 1%



Source: A-28.

Figure 14-17.

increase in capital expenditures.[60] To qualify for the investment tax credit, the property must:

1) Be depreciable;

2) Have a useful life of at least 3 years;

3) Be tangible personal property or other tangible property used as an integral part of manufacturing, production, or extraction etc.; and

4) Be placed in service in a trade or business or for production of income by you during the year.[61]

If all tax incentives were enacted together, the USSI would be able to generate an additional 1.2 billion dollars per year.[62]

Environmental Regulation Modification

Since environmental expenditures account for approximately 20% of capital expenditures in the USSI, the future expenditures in this area are of critical concern to the U.S. steel industry. The problem with proposing any EPA regulation modifications at this time is that the regulations are not firmly established enough to determine the effect of proposed modifications. In May, 1979, U.S. Steel Corp. reached an agreement with the EPA requiring the expenditure of 400-million dollars for environmental equipment and programs. In addition, Bethlehem Steel, another major steel company, is in the midst of negotiating a similar agreement. Mr. Ralph Thompson, of the U.S. Department of Commerce, feels these agreements will more firmly establish the EPA requirements for the USSI.[63] In addition, all states have been required to have environmental protection programs that meet Federal standards by July, 1979. This has added to the confusion concerning compliance with environmental regulations. One of the effects the confusion of environmental regulatory policies has on capital expenditures in the USSI is the uncertainty that a piece of equipment purchased at the present time will be able to perform within the acceptable environmental policies of the future. Therefore, the only environmental regulation modification to be considered at this time will be the 100% expensing of environmental expenditures by the USSI.

Modifications in Management

Although it is possible to increase productivity by utilizing progressive management techniques, the degree of productivity improvement is a function of the original management system. Each steel company has its own training, promotion, and management system. Although there have been increases in productivity of over 150% reported in specific steelmaking locations, the productivity increases, by modifying management, would be unique to each plant, and therefore impossible to forecast for the entire USSI.[64]

Changes in Output Mix

The only feasible method of economically changing the output mix of a steel mill would be by brownfield addition. The new capacity could be designed to expand existing product lines (i.e., larger sizes, metallurgical treatments, etc.) or go into entirely new product lines. Another way to change the output mix of a company is by acquisition of other companies that specialize in different areas either by purchase of merger.

The sum of all internal policy contributions would yield 1.3 to 1.5-billion dollars annually, which still leaves a gap of at least 0.5-billion dollars annually.

CHAPTER 5. POLICY ANALYSIS

The main system of policy analysis of the TPM and VRA will be traditional supply-demand analysis.[65] In this manner, the costs and benefits of the VRA and TPM can be investigated in an objective economic manner. The elasticities of the supply and demand schedules govern the magnitude of the various effects of international trade to be discussed. However, for the purpose of this analysis, the elasticities of the supply and demand schedule will not be considered. The internal policies were examined for their effects on increasing capital accrual in the USSI in Chapter 4.

Trigger Price Mechanism

The supply-demand economic analysis of the TPM is identical to that of a variable tariff in international trade. Although the TPM currently in existence operates like a variable tariff, for analytical purposes it will be assumed to be fixed at a specific level. Figure 5-1 illustrates the international trade situation under the TPM. The diagram will be analyzed in progressive steps in order to facilitate the understanding of the effects of the policy on the USSI, the JSI, and the U.S. consumer.

TRIGGER PRICE MECHANISM SUPPLY DEMAND ANALYSIS
UNITED STATES DOMESTIC STEEL MARKET

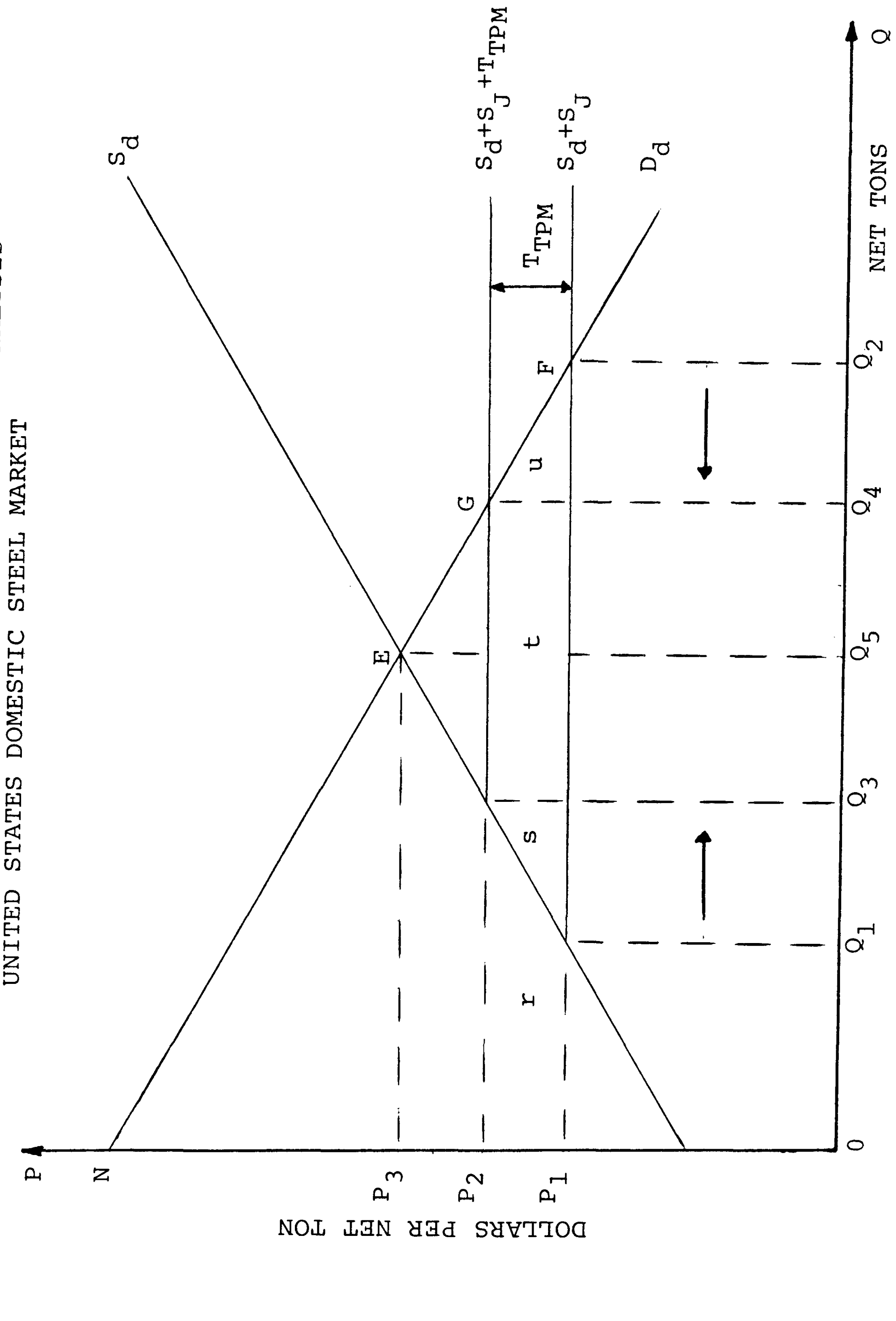


Figure 5-1.

No International Trade (Isolation)

The U.S. domestic steel market would consist of just the domestic supply curve (S_d) and the domestic demand curve (D_d), with the equilibrium being at point E. In reality, since the USSI cannot supply 100% of domestic demand in non-recession years, the supply curve would rise to infinity at some point before E. However, for analytical purposes, the domestic supply curve will be assumed to be continuous as shown in Figure 5-1. In this situation, the U.S. domestic steel price would be OP_3 and domestic production would be OQ_5. Total revenue to the USSI would be $OP_3 \times OQ_5$.

International Trade

The perfectly elastic steel supply from Japan would enable an infinite amount of steel to be exported at a fixed price. In Figure 5-1, OP_1 is equal to the JSI export price plus freight, insurance, handling, interest, and import duties. The import situation modifies the total domestic supply curve to $S_d + S_J$, creating a new equilibrium point F. The increase in supply and drop in price causes the quantity demanded in the U.S. domestic market to increase from OQ_5 to OQ_2. U.S. domestic supply at OP_1 is OQ_1 and revenue to the USSI is $OP_1 \times OQ_1$. The level of JSI exports at OP_1 is Q_1Q_2, and revenue to the JSI is $Q_1Q_2 \times OP_1$. Total consumer surplus is NP_1F. (Consumer surplus represents the savings to the consumer for not having to pay a succeedingly higher price for each ton of steel below the level of the purchase price of OP_1.)

TPM Implemented

The TPM calculates a "fair value" for steel product imports. For JSI products, this is tantamount to the establishment of a price floor since JSI costs are used to calculate the TPM. The tariff effect, T_{TPM}, is derived from the constructed value of the JSI cost of production which includes a minimum rate of return for the JSI. Added to the constructed value is: freight, insurance, interest, handling, and import duties to yield the TPM level. The TPM level, being higher than the "normal" JSI price, at least in the initial years of implementation, will result in a higher U.S. price under the TPM of OP_2. The new supply schedule, including the TPM, becomes $S_d + S_J + T_{TPM}$. At the higher price, U.S. domestic consumption is reduced to OQ_4 and the level of U.S. steel production increases to OQ_3. USSI revenues have increased to $OP_2 \times OQ_3$. JSI exports to the U.S. shrink to Q_3Q_4. JSI revenue has changed to $Q_3Q_4 \times OP_2$. The change may be a decrease or increase in revenue depending on the relative magnitudes of the increase due to the higher price and the decrease due to reduced shipments. Total consumer surplus is reduced to NP_2G.

Gains and Losses From the TPM

The gains and losses from the implementation of the TPM are contained in the consumer surplus loss area of P_1P_2GF. The various losses and gains will be discussed individually and in sum below.

Revenue Effect

The TPM enables the JSI to collect additional revenues per unit due to the price shift. Although the JSI looses the revenue $OP_1 \times (Q_1Q_3 + Q_4Q_2)$ due to the imposition of the TPM, the revenue gained is the area t in the amount of $P_1P_2 \times Q_3Q_4$. The net effect may be a gain or loss of revenue depending on the relative magnitudes of the gain and loss.

Redistribution Effect (r)

The TPM also enables the USSI to collect additional revenues due to the price and quantity shifts. The reduction in consumer surplus which accrues to the USSI is the area r. The gain to the USSI is a redistribution of real income from consumers to producers, a producer's surplus.

Protective Effect (s)

Part of the revenue accruing the USSI is the protective effect due to the increase in domestic production equal to Q_1Q_3. The cost of production inputs will increase due to increased demand. The area s is the portion of the consumer surplus loss diverted to the cost of attracting additional resources into the U.S. steel producing section from other parts of the economy. The actual expenditures may take the form of higher wages or benefits used to attract more or higher skilled workers. The protective effect also represents a real income loss to the economy and a reduction in aggregate efficiency. The assumption of full employment must be made in order that the resources being drawn into the USSI will then come from another sector of the economy and not from idle capacity.

Consumption Effect (u)

The consumption effect, area u, represents a residual loss of consumer satisfaction. Total consumption is reduced from OQ_2 to OQ_4.

Trade Effect

The trade effect measures the reduction in trade, Q_1Q_2-Q_3Q_4, due to the increase in price level.

Deadweight Loss

The deadweight loss, also known as the cost of the tariff, is the sum of the protective (s) and consumptive (u) effects of the TPM. The loss is not compensated for by any corresponding gain in any other sector of the economy.

TPM Analysis

The TPM currently in force exhibits good compliance with the supply-demand analysis developed above. As shown in Tables 5-1 and 5-2, in 1977, the JSI exports to the U.S. totaled 7,820,376 net tons which comprised 40.5% of total U.S. imports of steel mill products. In 1978, JSI exports to the U.S. dropped to 6,487, 166 net tons or 30.7% of total U.S. steel mill product imports. This reduction in JSI exports illustrates the trade effect as discussed previously. The TPM has affected the JSI export product mix to the U.S. both in total tonnage (as shown in Tables 5-3 and 5-4) and in percent of total JSI exports to the U.S. (shown in Tables 5-5 and 5-6). This shift to the more expensive alloy and stainless steels increased the total revenue to the JSI, although under the system of analysis used, the change in product mix is not considered. This illustrates the revenue effect (t) of the TPM in that the reduced JSI exports have increased in price on the U.S. domestic steel

Table 5-1.

Steel Mill Product Exports to U.S.

(Net tons)

(1977)

Month	Total	Japan	Japan % of Total
Jan	1,121,267	669,212	59.7
Feb	1,002,459	599,509	59.8
Mar	1,175,410	618,260	52.6
Apr	1,114,786	498,513	44.7
May	1,817,390	847,980	46.7
Jun	1,818,620	682,707	37.5
Jul	1,582,037	649,870	41.1
Aug	1,831,115	667,484	36.5
Sep	2,057,413	720,632	35.0
Oct	1,761,726	539,019	30.6
Nov	1,937,947	731,188	37.7
Dec	2,086,549	596,109	28.6
Total	19,306,719	7,820,376	40.5

Source: American Iron and Steel Institute

Table 5-2.

Steel Mill Product Exports to U.S.

(Net tons)

(1978)

Month	Total	Japan	Japan % of Total
Jan	1,537,793	560,973	36.5
Feb	2,219,592	847,596	38.2
Mar	1,988,233	697,337	35.1
Apr	2,174,892	611,045	28.1
May	1,511,255	359,467	23.8
Jun	1,359,820	397,132	29.2
Jul	1,784,814	456,230	25.6
Aug	1,870,390	595,241	31.8
Sep	1,584,169	540,174	34.1
Oct	1,715,239	425,552	24.8
Nov	2,016,345	581,022	28.8
Dec	1,372,040	415,397	30.3
Total	21,134,582	6,487,166	30.7

Source: American Iron and Steel Institute

Table 5-3.

Japanese Steel Mill Product Exports to U.S.

(Net tons)

(1977)

Month	Total	Carbon	Alloy	Stainless
Jan	669,212	641,345	21,013	6,854
Feb	599,509	575,143	18,702	5,664
Mar	618,260	594,008	18,432	5,820
Apr	498,513	474,136	17,290	7,087
May	847,980	818,131	19,988	9,861
Jun	682,707	649,236	19,070	14,401
Jul	649,870	621,554	24,453	3,863
Aug	667,484	636,170	21,880	9,434
Sep	720,632	689,906	21,796	8,930
Oct	539,019	511,219	19,760	7,968
Nov	731,188	693,680	29,472	8,036
Dec	596,109	563,746	23,895	8,468
Total	7,820,376	7,468,346	255,751	96,279

Source: American Iron and Steel Institute

Table 5-4.

Japanese Steel Mill Product Exports to U.S.

(Net tons)

(1978)

Month	Total	Carbon	Alloy	Stainless
Jan	560,973	530,796	20,553	9,444
Feb	847,596	810,183	29,165	8,248
Mar	697,337	668,705	22,304	6,328
Apr	611,045	572,203	28,795	10,047
May	359,467	331,644	19,292	8,531
Jun	397,132	362,333	23,603	11,196
Jul	456,230	428,100	20,205	7,925
Aug	595,241	567,279	19,204	8,758
Sep	540,174	512,502	22,173	5,499
Oct	425,552	398,642	19,777	7,133
Nov	581,022	548,717	25,616	6,689
Dec	415,397	389,099	19,728	6,570
Total	6,487,166	6,120,203	270,415	96,368

Source: American Iron and Steel Institute

Table 5-5.

Japanese Steel Mill Product Export Mix to U.S.

(Percent)

(1977)

Month	Carbon Steel	Alloy Steel	Stainless Steel
Jan	95.84	3.14	1.02
Feb	95.94	3.12	0.95
Mar	96.08	2.98	0.94
Apr	95.11	3.47	1.42
May	96.48	2.36	1.16
Jun	95.10	2.79	2.11
Jul	95.64	3.76	0.59
Aug	95.31	3.28	1.41
Sep	95.74	3.03	1.24
Oct	94.86	3.67	1.48
Nov	94.87	4.03	1.42
Dec	94.57	4.01	1.42
Total	95.50	3.27	1.23

Source: American Iron and Steel Institute

Table 5-6.

Japanese Steel Mill Product Export Mix to U.S.

(Percent)

(1978)

Month	Carbon Steel	Alloy Steel	Stainless Steel
Jan	94.62	3.66	1.68
Feb	95.59	3.44	0.97
Mar	95.89	3.20	0.91
Apr	93.64	4.71	1.64
May	92.26	5.37	2.37
Jun	91.24	5.94	2.82
Jul	93.83	4.43	1.74
Aug	95.30	3.23	1.47
Sep	94.87	4.11	1.08
Oct	93.68	4.65	1.68
Nov	94.44	4.41	1.15
Dec	93.67	4.75	1.58
Total	94.34	4.17	1.49

Source: American Iron and Steel Institute

market. The redistribution effect (r) is demonstrated in the increased profitability in the USSI. In 1977, profitability was 3.6%, in 1978 it had risen to 9.1%. This represents the gain in real income by the USSI from the implementation of the TPM.

Although the assumption of full employment is not complied with, due to a current unemployment rate of approximately 6%, certain factors of the protective effect (s) are evident. The creation of a regional protective effect is accomplished by increased capacity utilization and rising demand spurred by the TPM. The "inordinately" high wages and benefits paid to the USSI employees adds to the protective effect in that they attract manpower from other segments of the economy.

The consumptive effect (u) represents the loss to the consumer for paying higher price for a reduced amount of imports. This is relfected in the inflation component of the TPM. Since the TPM has provided an effective price floor for imports to the U.S., foreign exports to the U.S. and USSI domestic steel mill products have increased in price along with increases in the TPM. These increases have not been the result of normal market forces, and therefore contribute to inflation.

The analysis will be similar for 1979. In 1980, when the JSI export price to the U.S. is more than the U.S. domestic prices due to the TPM falling below U.S. domestic prices, a different situation will occur. The effects will reverse themselves and the increase in consumer surplus will be distributed exactly in reverse to the way they were created when the TPM was imposed.

Voluntary Restraint Agreement

The supply-demand analysis of the VRA is identical to that of a quota in international trade. Figure 5-2 illustrates the international trade situation under the VRA. As was done with the TPM, the diagram will be analyzed in progressive steps.

No International Trade (Isolation)

As in the case of the TPM, the U.S. domestic steel market would consist of just the domestic supply curve (S_d) and the domestic demand curve (D_d) with the U.S. domestic steel price being OP_3 and the domestic production level being OQ_5. Total revenue to the USSI would be $OP_3 \times OQ_5$.

VOLUNTARY RESTRAINT AGREEMENT SUPPLY DEMAND ANALYSIS
UNITED STATES DOMESTIC STEEL MARKET

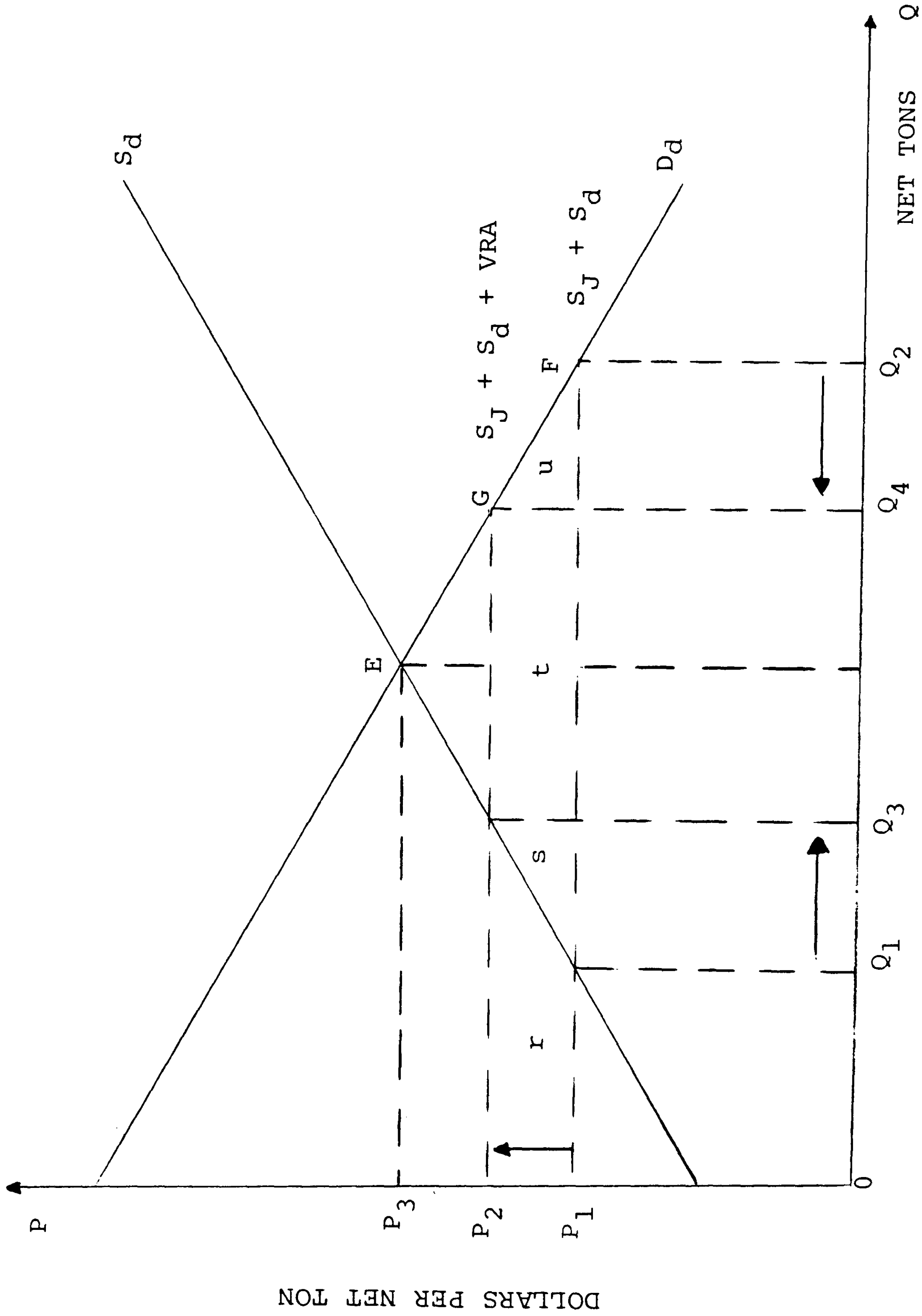


Figure 5-2.

International Trade

Since the steel supply from Japan is considered to be perfectly elastic, when trade is permitted, the supply schedule is modified to $S_J + S_d$, with the new equilibrium point at F. U.S. domestic demand is increased from OQ_5 to OQ_2. U.S. domestic supply at OP_1 is OQ_1 and revenue to the USSI is $OP_1 \times OQ_1$. JSI export level is Q_1Q_2, and the revenue to the JSI is $Q_1Q_2 \times OP_1$. Total consumer surplus is NP_1F.

VRP Implemented

The VRA creates a quota, or maximum level of exports permitted from Japan, as well as other countries, to the U.S. The export level, Q_4Q_3, reduces total domestic demand from OQ_2 to OQ_4. The higher price (P_2) stimulates U.S. domestic production which increases from $OQ_1 \times OQ_3$. The revenue to the USSI has increased from $OP_1 \times OQ_1$ to $OP_2 \times OQ_3$. The JSI revenue has decreased to $Q_4Q_3 \times OP_2$ from its pre-VRA level of $Q_2Q_1 \times OP_1$. Total consumer surplus has been reduced from NP_1F to NP_2G. The new equilibrium point is at G.

Gains and Losses From the VRA

The gains and losses from the implementation of the VRA are contained in the consumer surplus loss area of P_1P_2GF.

The effects of the VRA: revenue, redistribution, protective, consumption, trade, and deadweight loss are identical to those discussed previously concerning the TPM.

VRA Analysis

Although the analysis of the VRA is very similar to that of the TPM, there are two conspicuous areas of divergence. First, the economic changes are driven by a reduction in supply, not a change in price. Secondly, since a VRA is not currently in force, an up-to-date analysis similar to that produced for the TPM is not possible. Assuming the VRA proposed was implemented instead of the TPM in 1978, the resulting current analysis would resemble that of the TPM to a high degree.

CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS

The United States steel industry began to deteriorate as an international power by the early 1950's. As the USSI failed to modernize and incorporate state of the art innovations in the industry, Europe and Japanese steelmakers were doing just that. In Japan, the First Modernization Program succeeded in upgrading and modernizing existing facilities while the Second Modernization Program increased Japan's steelmaking capacity and introduced the then new basic oxygen furnace (BOF). In 1959, for the first time, aided by a 116-day steel strike, U.S. steel mill imports exceeded exports. Since 1959, finished steel imports have steadily exceeded exports. In 1966, the first requests for protection of the U.S. domestic steel industry appeared. The answer to the import problem surfaced in 1968, when a VRA was negotiated for a 3-year period. This agreement was renewed for an additional 3 years in 1972.

The worldwide steel boom of 1973-74 proved that the USSI was unable to provide for peak U.S. domestic demand. The subsequent steel recession of 1975 harmed the cash flow and profitability of the USSI. In 1977, domestic demand was the third highest in the nation's history, yet there were employee layoffs and plant closings. The USSI claimed unfair trade practices were being used by foreign exporters of steel mill products to the U.S. to capture a large part of the U.S. domestic market. The U.S. government intervened and established the TPM, which established a "fair value" for steel imports based on JSI production costs.

Trigger Price Mechanism

The TPM program has proved to be both beneficial and detrimental to international steel trade. It has firmed prices by virtually eliminating illegal "discounts" and selling items at less than cost. In addition, the TPM has aided the USSI in increasing its profitability and general economic health.

Due to the time lag in implementing certain updated parameters of the TPM, the program is not a reflection of current economic conditions. Since the TPM is updated quarterly, the normal steel import situation in the U.S. becomes disjointed due to exporting countries trying to maximize imports before the higher TPM prices go into effect. The situation may reverse itself in the near future if the dollar can post a sustained appreciation against the yen, causing a downward revision in the TPM. The TPM in 1978 definitely added to inflation due to the steady revisions upward. By using the Bureau of Labor Statistics minimum multiplier of two, between steel mill product and finished metal goods, the American consumer paid an estimated $13.7 billion in steel spurred inflation in 1978.[66] This has enabled domestic steel producers to raise their prices and obtain protection from lower priced imported steel products.

Due to the nature of the TPM, there are several ways of circumventing the program. Since the trigger price that applies to the imported steel is the one in effect at the time the shipment leaves the home port, steel that is shipped unsold to be stockpiled in the U.S. for later sale can be sold at less than the current trigger price.[67] Additional charges for handling, packaging, sizing, or special metallurgical processing can be reduced or eliminated in order to provide a lower price. Minor fabrication, or "pseudofabrication" of material can be done in the home country, such as punching a hole in a steel plate and then selling the plate as a fabricated item, thereby avoiding the trigger price for the steel plate.[68] Primary quality steel products may be sold as secondary quality products, below the trigger price of the higher quality item.[69] The imported steel could be sold to a subsidiary of the exporting company located in the U.S. and then resold to U.S. domestic consumers at a lower price. The producer (non-Japanese) could sell items at less than the trigger price if a lower fair market value could be proven on the basis of lower production costs.

The TPM will only last until the dollar strengthens with respect to the yen, thereby lowering the fair value level for steel mill products, or, if the USSI cost of production increases the U.S. domestic prices to over 5% above the TPM. There will have to be modifications of the TPM if it is to endure as the main protectionist measure of the U.S. steel industry. When the TPM price levels are more than 5% below U.S. domestic prices, the TPM will become ineffective.

There have been proposed modifications in the TPM system. If the yen/dollar rate stabilizes below the 200 mark, another country that produces a wide range of steel products could be considered for the basis of the TPM. A two tier system utilizing different TPM levels for Europe and Japan has been suggested. Another possibility would be the use of a system similar to that employed by the EEC;

imports could be sold at 5-8% below domestic price, but not lower. This system is therefore not linked to international exchange rates.

Although the TPM is not considered to be a permanent policy, it will be present in some form until another steel boom similar to 1973-74 occurs, or until TPM steel price levels are sustained at a level at least 5% below the comparable U.S. domestic prices.

Voluntary Restraint Agreement

The implementation of the VRA program proposed in Chapter 3 would cause the U.S. government to have almost complete control over the steel mill products imported to the U.S. (except for the smaller exporting countries). Although the VRA import determination system will yield allowable import levels for carbon, alloy, and stainless steel, the system might have to be expanded to cover the 32 product classifications of the AISI. This would only happen if there is a marked shift in product distribution within the carbon, alloy, or stainless steel import levels and the shift could be proven to be harmful to the U.S. domestic steel industry.

The key to the success of the VRA is accurate determination and projection of the USSI raw steel capacity and U.S. domestic demand for steel mill products. There is the potential to over estimate the raw steel capacity in the U.S., thereby producing lower VRA import levels. In a similar manner, U.S. domestic demand could be understated which could also reduce import levels.

The VRA solution to international steel problems is favored by the nations exporting steel to the U.S. Although the U.S. domestic market would not be completely open to competition from foreign exporters, the exporters are guaranteed the opportunity to compete for part of the U.S. domestic market.

A danger to the U.S. consumer can occur if the U.S. domestic market becomes too dependent on foreign steel product imports. Under these circumstances, if another worldwide steel boom occurs as did in 1973-74, the U.S. consumer could find domestically produced steel unavailable and foreign imported steel products available only at prices above domestic rates.

The establishment of a VRA would have the same economic effect as the establishment of a quota. Whether an import limit is created unilaterally (quota) or bilaterally (VRA), the result is the same.

The effect of the VRA on the USSI would be economically positive. At a guaranteed minimum capacity utilization rate of 85%, the USSI would have added financial stability. The employment level would not decrease at a capacity utilization rate of 85%, and depending on how high the rate actually is, could increase. Employee productivity would rise as capacity utilization rises. Capital investment would increase due to improved cash flow from higher production levels. Raw steel capacity would increase as the profitability of steelmaking increases due to higher capacity utilization rates, making investment in U.S. domestic steelmaking more attractive. The level of production of finished steel would increase as raw steel production increases and yield increases due to technological advances and new capacity additions.

The JSI export level (tonnage) to the U.S. would be controlled by the projection techniques of the VRA. In a similar fashion, JSI export product mix would be controlled in order to prevent damage to a single U.S. domestically produced product or product line. JSI export price to the U.S. would not be controlled by any mechanism except fast track anti-dumping legislation and the price level supported by the U.S. domestic market.

Any increase in domestic demand that could not be satisfied by the USSI would cause prices to be increased. By fixing the import levels for steel mill products, changes in the U.S. domestic market would be satisfied by changes in price, not changes in quantity.[70] In boom times for steel demand similar to 1973-74, the inflationary impact of spiraling U.S. domestic steel prices could be reduced by permitting increased steel exports to the U.S.

Due to the USSI receiving a guarantee of an 85% capacity utilization rate, and a corresponding amount of the U.S. domestic market, the U.S. government will continue to exert de facto price controls on the USSI. The cost increase to the U.S. consumers of steel mill products will likely fall within governmental guidelines regarding inflation.

Internal Policies

Although the implementation of all proposed internal policies would still leave a capital shortage of at least $500 million per year in the USSI, the policies would aid a great deal in capital formation, modernization, and expansion of raw steel capacity. The effect on the USSI would be positive. The employment level would rise as new capacity was added and older facilities were renovated. The productivity of employees would rise as the plants are modernized and newer, improved management techniques are utilized thereby lowering the man-hours per net ton of production. Since the plants would be more modern, this would enable the USSI to be more competitive with foreign exporters to the U.S. In some areas, the USSI would become internationally competitive if the proper investments are made.

With the general upgrading of the USSI achieved by improved cash flow, the foreign exporters to the U.S. would face stiffer competition in the U.S. domestic steel market. There is the possibility of a foreign country shifting its export mix to favor a certain product line in which it has the greatest comparative advantage over the U.S. domestic producers. This would cause selective market dislocations in the U.S. domestic steel market. Although the improved cash flow situation will not put the USSI on a par with the JSI, the JSI will still have to maintain export prices at 5% or more below U.S. domestic prices in order to keep its share of the U.S. domestic market. As productivity and efficiency in the USSI improves, the profit margin of the JSI products in the U.S. will be cut.

The USSI domestic price level will reflect the increased investment in the industry by increasing at or below the general rate of inflation in the U.S. As the steel mills improve in efficiency, the level of production in the USSI should rise as it recaptures markets formerly lost to foreign competition. During the initial stages of revitalization, the USSI would require some form of economic protection from foreign competition.

The most plausible solution on a long-term basis would be the negotiation of a universal international steel agreement among all exporting nations. The agreement would be administered in much the same way as the proposed VRA. Exceptions would have to be granted to third world countries to account for their quickly changing consumption and production patterns.

Internally, the U.S. government could modify tax laws, reduce the guideline life for depreciation from 18 to 15 years, increase the investment tax credit to a permanent level of 12%, and permit 100% EPA expenditure writeoffs. In addition, EPA regulations should be stabilized. The USSI itself must explore new management techniques in order to improve productivity. The product output of planned expansion and acquisition must be considered with respect to current and future markets.

The course for the U.S. steel industry will require close observation in the future. After the USSI receives the increased profits from protectionist measures and governmental legislation, the USSI would be faced with the question of whether to reinvest the capital in the steel industry for a low return on investment, or to invest the money elsewhere in non-steel areas for a higher rate of return. The diversification route offers security by not relying on one industry for profits, and the opportunity to earn higher profits. However, since the profits were derived from the U.S. domestic market at an oligopoly cost to the consumer, the USSI would be obligated to reinvest excess profits in the USSI, thereby raising productivity and lowering the cost to the U.S. consumer. The amount that the USSI would be required to reinvest in steel industry would be the amount of profit that exceeds the all manufacturing average as measured by return on investment. The areas of required re-investment for the USSI would include: modernization and upkeep of the physical plant, improvements in management, inventory control, marketing, and metallurgical research.

In any event, the USSI will have to be protected against free trade with foreign steel exporters if it is to survive as a viable U.S. industry.

APPENDIX A

Figure A-1.

Steel Mill Products Used For Import Calculations

Ingots, blooms, billets, slabs, etc.
Wire rods
Structural shapes - Plain 3" & over
Sheet piling
Plates
Rail and track accessories
Wheels and axles
Concrete reinforcing bars
Bar shapes inder 3"
Bars - Hot rolled - Carbon
Bars - Hot rolled - Alloy
Bars - Cold finished
Hollow drill steel
Welded pipe and tubing
Other pipe and tubing
Round and shaped wire
Flat wire
Bale ties
Galvanized wire fencing
Wire nails
Barbed wire
Black plate
Tin plate
Terne plate
Sheets - Hot rolled
Sheets - Cold rolled
Sheets - Coated (incl. galvanized)
Sheets - Coated - Alloy
Strip - Hot rolled
Strip - Cold rolled
Strip - Hot & cold rolled - Alloy
Sheets - Other - Electric coated

Source: American Iron and Steel Institute, Annual Statistical Report, 1977, p.46.

Figure A-2

Iron and Steel Products Not Used For Import Calculations

Structural shapes, fabricated
Shapes - Cold formed
Sashes and frames
Fence or sign posts
Wire - nonmetallic covered
Wire rope
Wire strand
Welded wire fabric
Other nails and staples
Bale ties - Strip
Bolts, nuts, and rivets
Grinding balls
Blanks, nonrectangular flat rolled
Rigid conduit
Pipe and tube fittings
Bar iron, iron slabs &bloons, etc.
Cast iron soil pipe and fittings
Other cast iron pipe and fittings
Malleable cast iron pipe fittings
Castings and forgings
Pig irn
Sponge iron
Ferromanganese (manganese content)
Ferrosilicon (silicon content)
Ferrochromium (chromium content)
Other ferroalloys

Source: American Iron and Steel Institute, Annual Statistical Report, 1977, p.46.

TABLE A-1

RAW STEEL PRODUCTION

(thousands of net tons)

Year	U.S. Raw Steel Production	World Raw Steel Production	U.S % of World
1945	79,702	127,041	62.7
1946	66,603	123,011	54.1
1947	84,894	150,110	56.6
1948	88,640	171,399	51.7
1949	77,978	176,268	44.2
1950	96,836	207,829	46.6
1951	105,200	230,780	45.6
1952	93,168	232,735	40.0
1953	111,610	158,300	43.2
1954	88,312	245,678	35.9
1955	117,036	297,221	39.4
1956	115,216	310,840	37.1
1957	112,715	320,222	35.2
1958	85,255	298,878	28.5
1959	93,446	337,173	27.7
1960	99,282	381,582	26.0
1961	98,014	390,062	25.1
1962	98,328	394,056	25.0
1963	109,261	422,239	25.9
1964	127,076	479,025	26.5
1965	131,462	503,083	26.2
1966	134,101	519,124	25.8
1967	127,213	547,600	23.2
1968	131,462	582,548	22.6
1969	141,262	632,010	22.4
1970	131,514	654,184	20.1
1971	120,443	639,907	18.8
1972	133,241	694,481	19.2
1973	150,799	768,570	19.6
1974	145,720	782,798	18.6
1975	116,642	712,033	16.4
1976	128,000	745,592	17.2
1977	125,333	742,501	16.9
1978	137,031	784,652	17.5

Source: American Iron and Steel Institute Annual Statistical Report, various issues

TABLE A-2

STEEL MILL PRODUCTS

(thousands of net tons)

Year	Total Net Shipments	U.S. Exports	U.S. Imports	U.S. Steel Supply	Import % of Supply
1945	57,242	4,354	54	52,942	0.1
1946	48,776	4,375	23	44,424	0.1
1947	63,057	5,919	32	57,170	0.1
1948	65,973	3,950	148	62,171	0.2
1949	58,104	4,344	219	53,979	0.4
1950	72,232	2,639	1,014	70,607	1.4
1951	78,929	3,137	2,265	78,057	2.9
1952	68,004	4,005	1,201	65,200	1.8
1953	80,152	2,991	1,703	78,864	2.2
1954	63,153	2,792	771	61,132	1.3
1955	84,717	4,061	973	81,629	1.2
1956	83,251	4,348	1,336	80,239	1.7
1957	79,895	5,348	1,155	75,702	1.5
1958	59,914	2,823	1,707	58,798	2.9
1959	69,377	1,677	4,396	72,096	6.1
1960	71,149	2,977	3,359	71,531	4.7
1961	66,126	1,990	3,163	67,299	4.7
1962	70,552	2,013	4,100	72,639	5.6
1963	75,555	2,224	5,446	78,777	6.9
1964	84,945	3,442	6,440	87,943	7.3
1965	92,666	2,496	10,383	100,553	10.3
1966	89,995	1,724	10,753	99,024	10.9
1967	83,897	1,685	11,455	93,667	12.2
1968	91,856	2,170	17,960	107,646	16.7
1969	93,877	5,229	14,034	102,682	13.7
1970	90,798	7,062	13,364	97,100	13.8
1971	87,038	2,827	18,034	102,515	17.9
1972	91,805	2,873	17,681	106,613	16.6
1973	111,430	4,052	15,150	122,528	12.4
1974	109,472	5,833	15,970	119,609	13.4
1975	79,957	2,953	12,012	89,016	13.5
1976	89,447	2,654	14,285	101,078	14.1
1977	91,147	2,003	19,307	108,451	17.8
1978	97,935	2,422	21,135	116,648	18.1

Source: American Iron and Steel Institute Annual Statistical Report, various issues

Table A-3.

Unit Cost for Inputs: U.S. and Japan
(Dollars per metric ton of steel produced)

Year	Total		Labor		Iron ore		Scrap		Coking coal	
	U.S.	Japan	U.S.	Japan	U.S.	Japan	U.S.	Japan	U.S.	Japan
1976	294.65	161.93	143.55	49.64	44.51	26.87	21.82	22.72	53.73	41.38
1975	270.27	159.26	132.87	49.93	37.58	27.85	18.98	17.23	52.40	43.18
1974	215.55	147.30	100.91	42.60	29.66	21.65	34.10	33.65	29.20	29.84
1973	161.21	100.97	87.31	35.32	24.42	17.62	17.08	23.38	17.44	15.18
1972	155.11	83.56	89.52	31.97	23.84	16.97	11.26	12.04	16.08	14.65
1971	145.98	81.28	85.03	27.98	22.85	19.43	8.53	9.06	15.15	16.76
1970	137.23	78.05	80.81	23.22	21.54	17.47	10.05	16.05	12.80	14.65
1969	125.25	69.93	75.18	21.20	20.34	16.66	8.60	14.00	10.29	11.72
1968	119.40	67.78	70.35	20.83	20.65	16.99	6.71	12.16	10.69	10.91
1967	117.70	69.53	69.88	19.93	20.10	16.68	6.73	15.73	10.83	10.27
1966	113.21	71.86	65.93	20.68	19.95	18.14	7.72	14.88	9.99	10.84
1965	112.99	76.38	65.06	22.11	19.92	18.63	8.56	16.75	9.78	10.94
1964	114.97	75.20	67.00	20.97	20.41	16.73	8.25	19.27	9.74	10.05
1963	116.01	79.03	69.62	23.76	19.60	17.80	7.39	18.12	9.16	10.99
1962	118.74	81.56	71.36	24.10	19.93	18.97	6.83	17.43	10.17	12.33
1961	122.50	91.59	72.36	21.94	20.58	18.54	9.45	30.09	10.21	11.85
1960	120.18	85.08	71.83	23.01	19.47	17.91	8.24	23.16	11.48	11.50
1959	113.98	90.04	66.67	25.02	17.25	18.08	10.87	24.59	10.93	13.03
1958	122.18	98.65	70.09	30.12	19.75	21.20	9.94	19.37	13.09	16.75
1957	110.00	133.21	60.24	26.79	18.17	31.55	10.95	37.98	12.73	23.03
1956	110.84	119.83	54.67	26.66	17.51	25.78	17.78	35.15	12.15	20.01

Table A-3. (Continued)

Unit Cost for Inputs: U.S. and Japan
(Dollars per metric ton of steel produced)

Year	Fuel oil		Electric power		Non-coking Coal		Natural gas
	U.S.	Japan	U.S.	Japan	U.S.	Japan	U.S.
1976	5.05	6.84	15.84	14.47	0.85	0.00	9.31
1975	4.95	8.66	14.03	12.41	0.85	0.00	8.60
1974	5.02	9.01	10.21	10.54	0.76	0.00	5.67
1973	1.91	3.43	8.09	6.04	0.54	0.00	4.40
1972	1.60	2.47	7.60	5.45	0.54	0.00	4.64
1971	1.54	2.73	7.70	5.31	0.62	0.00	4.55
1970	1.23	1.81	6.49	4.74	0.56	0.11	3.74
1969	0.94	1.44	5.83	4.80	0.51	0.10	3.54
1968	1.09	1.74	5.74	5.02	0.61	0.10	3.56
1967	1.05	1.87	5.30	4.92	0.63	0.13	3.16
1966	1.14	1.75	4.90	5.33	0.63	0.24	2.93
1965	1.28	1.93	4.64	5.70	0.63	0.31	3.09
1964	1.41	1.92	4.48	5.88	0.63	0.37	3.01
1963	1.58	2.04	4.73	5.87	0.73	0.45	3.19
1962	1.59	1.92	4.71	6.28	0.83	0.54	3.29
1961	1.74	2.04	4.27	6.50	0.89	0.63	2.99
1960	1.80	2.30	3.92	6.44	0.85	0.75	2.59
1959	1.78	2.09	3.47	6.61	0.80	0.61	2.19
1958	1.99	2.54	3.96	6.72	1.07	1.94	2.28
1957	1.97	4.27	3.73	6.29	0.75	3.31	1.46
1956	2.26	2.85	4.15	6.07	0.74	3.31	1.58

Source: Duke, Richard, et al, The United States Steel Industry and Its International Rivals: Trends and Factors Determining International Competitiveness, Federal Trade Commission, Bureau of Economics, 1977, pp. 113,114

TABLE A-4.

Unit Purchases of Inputs: U.S. and Japan
(Units of input per metric ton of steel produced)

Year	Labor (man-hours)		Iron ore (metric ton)		Scrap (metric ton)		Coking coal (metric ton)		Fuel oil (metric ton)	
	U.S.	Japan	U.S.	Japan	U.S.	Japan	U.S.	Japan	U.S.	Japan
1976	11.82	9.46	1.462	1.542	.285	.252	0.869	.700	.073	.096
1975	12.04	10.09	1.421	1.667	.269	.194	0.903	.771	.069	.101
1974	10.78	10.04	1.371	1.481	.319	.252	0.774	.665	.067	.118
1973	10.87	10.30	1.431	1.437	.299	.274	0.800	.637	.060	.131
1972	11.99	12.85	1.438	1.485	.310	.273	0.825	.669	.056	.146
1971	12.73	14.12	1.467	1.678	.254	.232	0.900	.783	.053	.163
1970	13.23	13.68	1.496	1.475	.249	.290	0.946	.726	.053	.133
1969	12.95	15.07	1.486	1.431	.283	.311	0.868	.717	.050	.118
1968	13.08	17.73	1.522	1.389	.263	.311	0.916	.688	.058	.122
1967	13.67	19.15	1.531	1.317	.248	.342	0.950	.655	.057	.126
1966	13.37	22.53	1.541	1.381	.254	.336	0.924	.683	.062	.133
1965	13.76	26.70	1.531	1.388	.253	.364	0.919	.695	.070	.143
1964	14.47	27.97	1.560	1.243	.249	.425	0.897	.632	.076	.145
1963	15.11	35.48	1.524	1.311	.277	.424	0.888	.676	.082	.145
1962	15.79	38.39	1.558	1.326	.246	.421	0.951	.729	.081	.132
1961	16.59	37.75	1.585	1.305	.265	.546	0.942	.693	.089	.122
1960	17.12	43.15	1.583	1.261	.260	.461	0.987	.668	.093	.129
1959	16.07	49.43	1.448	1.292	.270	.477	0.945	.724	.094	.134
1958	18.06	61.70	1.687	1.309	.265	.407	1.134	.787	.107	.133
1957	16.70	56.87	1.581	1.454	.238	.453	1.073	.797	.088	.142
1956	16.31	60.66	1.650	1.401	.336	.483	1.118	.820	.111	.143

Table A-4. (continued)

Unit Purchases of Inputs: U.S. and Japan
(Units of input per metric ton of steel produced)

Year	Electric power (kWh) U.S.	Electric power (kWh) Japan	Non-coking coal (metric ton) U.S.	Non-coking coal (metric ton) Japan	Natural gas (MCF) U.S.
1976	558	472	.034	.000	7.50
1975	532	465	.037	.000	7.60
1974	482	432	.038	.000	7.01
1973	473	423	.045	.000	6.60
1972	465	451	.047	.000	7.51
1971	497	500	.056	.000	8.00
1970	452	462	.055	.007	7.10
1969	417	469	.060	.008	7.22
1968	416	490	.076	.009	7.30
1967	387	480	.079	.012	6.77
1966	355	520	.080	.021	6.16
1965	338	556	.081	.026	6.61
1964	327	574	.080	.030	6.44
1963	341	600	.090	.036	6.69
1962	337	625	.101	.042	6.91
1961	310	672	.105	.047	6.37
1960	287	689	.101	.056	5.50
1959	257	729	.093	.043	4.79
1958	295	741	.120	.112	5.16
1957	295	693	.083	.138	3.50
1956	330	669	.085	.159	3.85

Source: Duke, Richard, et al, The United States Steel Industry and Its International Rivals: Trends and Factors Determining International Competitiveness, Federal Trade Commission, Bureau of Economics, 1977, pp. 115,116

TABLE A-5.

Price of Inputs: U.S. and Japan
(Dollars)

Year	Labor (man-hour)		Iron ore (metric ton)		Scrap (metric ton)		Coking coal (metric ton)		Fuel oil (metric ton)	
	U.S.	Japan	U.S.	Japan	U.S.	Japan	U.S.	Japan	U.S.	Japan
1976	12.14	5.25	30.45	17.43	76.55	90.19	61.77	59.08	68.88	71.08
1975	11.03	4.94	26.44	16.70	70.58	88.74	58.05	56.02	71.88	85.44
1974	9.35	4.24	21.63	14.62	106.78	133.70	37.72	44.88	74.96	76.36
1973	8.02	3.42	17.06	12.26	57.02	85.19	21.81	23.82	32.06	26.12
1972	7.46	2.48	16.58	11.43	36.30	44.18	19.49	21.90	28.73	16.87
1971	6.67	1.98	15.56	11.58	33.55	39.07	16.83	21.40	29.02	16.70
1970	6.10	1.69	14.39	11.84	40.40	55.40	13.53	20.16	23.18	13.60
1969	5.80	1.40	13.69	11.64	30.38	44.99	11.86	16.34	18.69	12.19
1968	5.37	1.17	13.57	12.23	25.44	39.05	11.67	15.87	18.85	14.41
1967	5.11	1.04	13.13	12.66	27.18	45.99	11.39	15.67	18.36	14.83
1966	4.93	0.91	12.94	13.13	30.38	44.30	10.82	15.88	18.29	13.15
1965	4.72	0.82	13.01	13.42	33.80	46.07	10.64	15.73	18.36	13.52
1964	4.63	0.75	13.09	13.46	33.13	45.37	10.86	15.91	18.59	13.21
1963	4.60	0.66	12.86	13.58	26.68	42.75	10.31	16.25	19.25	14.05
1962	4.51	0.62	12.79	14.30	27.78	41.36	10.69	16.92	19.59	14.47
1961	4.36	0.58	12.99	14.20	35.70	55.08	10.84	17.09	19.55	16.78
1960	4.19	0.53	12.29	14.20	31.70	50.22	11.64	17.23	19.25	17.77
1959	4.14	0.50	11.91	14.00	40.26	51.54	11.57	18.00	18.85	15.52
1958	3.87	0.48	11.70	16.20	37.48	47.57	11.55	21.29	18.59	19.20
1957	3.60	0.47	11.49	21.70	46.00	83.80	11.87	28.90	22.32	29.98
1956	3.35	0.43	10.61	18.40	52.95	72.75	10.86	24.40	20.41	19.95

Table A-5. (continued)

Price of Inputs: U.S. and Japan
(Dollars)

Year	Electric power (M kWh)		Non-coking coal (metric ton)		Natural gas (MCF)
	U.S.	Japan	U.S.	Japan	U.S.
1976	28.36	30.63	24.55	–	1.24
1975	26.39	26.65	23.01	–	1.13
1974	21.21	24.37	20.46	–	0.81
1973	17.11	14.28	12.25	–	0.67
1972	16.36	12.07	11.57	–	0.62
1971	15.50	10.61	11.19	–	0.57
1970	14.34	10.24	10.23	15.33	0.53
1969	13.96	10.24	8.46	12.04	0.49
1968	13.78	10.24	7.97	11.47	0.49
1967	13.69	10.24	7.94	11.26	0.47
1966	13.76	10.24	7.91	11.65	0.48
1965	13.72	10.24	7.85	11.78	0.47
1964	13.72	10.24	7.91	12.30	0.47
1963	13.85	10.24	8.08	12.56	0.48
1962	13.96	10.05	8.26	12.87	0.48
1961	13.78	9.66	8.45	13.39	0.47
1960	13.69	9.35	8.42	13.30	0.47
1959	13.49	9.07	8.62	14.23	0.46
1958	13.43	9.07	8.92	17.40	0.44
1957	12.65	9.07	9.05	23.93	0.42
1956	12.58	9.07	8.78	20.78	0.41

Source: Duke, Richard, et al, The United States Steel Industry and Its International Rivals: Trends and Factors Determining International Competitiveness, Federal Trade Commission, Bureau of Economics, 1977, pp. 117,118

TABLE A-6.

JSI INPUT COST OF PRODUCTION PER NET TON

Year	Current Dollars	% Increase (Decrease) Over Previous Year	Current Yen	% Increase (Decrease) Over Previous Year
1960	77.18		27761.6	
1061	83.09	7.66	29887.5	7.66
1962	73.99	(12.30)	26614.2	(12.20)
1963	71.70	(3.19)	25790.5	(3.19)
1964	68.22	(5.10)	24538.7	(5.10)
1965	69.29	1.57	24923.6	1.57
1966	65.19	(6.29)	23448.8	(6.29)
1967	63.08	(3.34)	22689.9	(3.34)
1968	61.48	(2.60)	22118.0	(2.60)
1969	63.44	3.19	22819.4	3.19
1970	70.81	11.62	25479.4	11.62
1971	73.71	4.10	25835.4	1.43
1972	75.81	2.85	23349.5	(10.65)
1973	91.60	20.83	24933.5	6.78
1974	133.62	45.87	38950.2	56.22
1975	144.82	8.38	42881.7	10.09
1976	146.90	1.44	43570.5	1.61
1977*	165.30	11.30	43899.8	0.76

Input Cost: Labor, iron ore, scrap, coking coal, fuel oil, electric power, non-coking oil, natural gas.

Source: Duke, Richard, et al, The United States Steel Industry and Its International Rivals: Trends and Factors Determining International Competitiveness, Federal Trade Commission, Bureau of Economic, 1977, pp. 113-114.

*Computed from: Marcus, Peter, et al, World Steel Dynamics, Core Report H, Price/Cost Model for Japanese Carbon Steel Industry, Paine Webber Mitchell Hutchins, Inc., 1978, p. H-1-15.

TABLE A-7.

YEN/DOLLAR EXCHANGE RATE

(1970-1977)

Year	Qtr	Rate
1970	I	359.7
	II	359.7
	III	359.7
	IV	359.7
1971	I	359.7
	II	359.7
	III	354.6
	IV	327.9
1972	I	308.0
	II	308.0
	III	308.0
	IV	308.0
1973	I	284.1
	II	265.0
	III	265.0
	IV	274.6
1974	I	292.3
	II	279.1
	III	294.6
	IV	300.0
1975	I	293.3
	II	292.4
	III	298.0
	IV	303.6
1976	I	302.4
	II	299.2
	III	291.1
	IV	293.6
1977	I	285.6
	II	275.2
	III	266.1
	IV	247.0

Source: International Financial Statistics, International Monetary Fund, Washington, D.C., various issues.

TABLE A-8.

YEN/DOLLAR EXCHANGE RATE

1978

Month	Rate
Jan	241.1
Feb	240.3
Mar	231.5
Apr	221.7
May	226.4
Jun	214.3
Jul	199.9
Aug	188.5
Sep	190.2
Oct	184.1
Nov	191.4
Dec	196.3
1979	
Jan	197.7
Feb	200.2*
Mar	205.9*
Apr	216.2*

Source: International Financial Status, International Monetary Fund, Washington, D.C., various issues.

*Computed from Wall Street Journal, various issues.

TABLE A-9.

COMPOSITE CARBON STEEL PRICE

(Current Dollars Per Net Ton)

Year	JSI Export Price in U.S.	USSI Domestic Price
1960	138.42	165.50
1961	137.84	164.81
1962	137.56	164.47
1963	138.28	165.53
1964	139.28	166.70
1965	135.64	160.73
1966	131.63	163.19
1967	138.64	158.36
1968	131.73	158.36
1969	143.91	168.25
1970	172.18	181.66
1971	178.84	192.58
1972	199.12	206.41
1973	230.83	209.62
1974	367.01	298.12
1975	351.98	345.82
1976	289.59	367.92
1977	310.33	403.16

Source: Putnam, Hayes & Bartlett, Inc., Economics of International Steel Trade, American Iron and Steel Institute, Washington, D.C., 1977, p. 29.

Calculated from: Putnam, Hayes & Bartlett, Inc., The Economic Implications of Foreign Steel Pricing Practices in the U.S. Market, American Iron and Steel Insitute, Washington, D.C., 1978, p. 56.

Wholesale Price Index used for projections.

TABLE A-10.

USSI INPUT COST OF PRODUCTION PER NET TON

Year	Current Dollars	% Increase (Decrease) Over Previous Year
1960	109.03	
1961	111.13	1.93
1962	107.72	(3.17)
1963	105.24	(2.36)
1964	104.30	(0.90)
1965	102.50	(1.76)
1966	102.70	0.20
1967	106.78	3.97
1968	108.32	1.44
1969	113.63	4.90
1970	124.49	9.56
1971	132.43	6.38
1972	140.72	6.26
1973	146.25	3.93
1974	195.55	33.71
1975	245.19	25.38
1976	267.30	9.02
1977*	292.43	9.40

Input Cost: Labor, iron ore, scrap, coking coal, fuel oil, electric power, non-coking coal, natural gas.

Source: Duke, Richard, et al, The United States Steel Industry and Its International Rivals: Trends and Factors Determining International Competitiveness, Federal Trade Commission, Bureau of Economics, 1977, pp. 113-114.

*Computed from: Marcus, Peter, et al, World Steel Dynamics, Core Report H, Price/Cost Model for Japanese Carbon Steel Industry, Paine Webber Mitchell Hutchins, Inc., 1978, p. H-1-15.

TABLE A-11.

PROFIT AS A PERCENT OF STOCKHOLDERS' EQUITY

(after tax)

Year	U.S. Iron & Steel Industry	All Manufacturing Industries in U.S.
1960	7.2	9.2
1961	6.2	8.8
1962	5.5	9.8
1963	7.0	10.3
1964	8.8	11.6
1965	9.8	13.0
1966	10.3	13.5
1967	7.7	11.7
1968	7.6	12.1
1969	7.6	11.5
1970	4.3	9.3
1971	4.5	9.7
1972	6.0	10.6
1973	9.5	12.8
1974	16.9	14.9
1975	10.9	11.6
1976	9.0	14.0
1977*	3.6	14.2
1978*	9.1	14.6

Source: Duke, Richard, et al, The United States Steel Industry and Its International Rivals: Trends and Factors Determining International Competitiveness, Federal Trade Commission, Bureau of Economics, 1977, p. 68.

*Quarterly Financial Report, Federal Trade Commission, Bureau of Economics, various issues.

TABLE A-12.

CAPACITY UTILIZATION RATE

(Percent)

Year	USSI
1960	66.8
1961	65.4
1962	65.3
1963	72.4
1964	83.7
1965	86.1
1966	87.4
1967	82.5
1968	84.8
1969	90.8
1970	84.6
1971	77.1
1972	86.1
1973	97.3
1974	93.7
1975	74.5
1976	80.1
1977*	78.4
1978*	86.6

Source: Prices and Costs in the United States Steel Industry, The Council on Wage and Price Stability, 1977, p. 16.

*American Iron and Steel Institute.

Table A-13.

TOTAL U.S. IMPORTED STEEL MILL PRODUCT LEVEL

Year	Net Tons ($x 10^6$)	% of U.S. Supply
1960	3.359	4.7
1961	3.163	4.7
1962	4.100	5.6
1963	5.446	6.9
1964	6.440	7.3
1965	10.383	10.3
1966	10.753	10.9
1967	11.455	12.2
1968	17.960	16.7
1969	14.034	13.7
1970	13.364	13.8
1971	18.034	17.9
1972	17.681	16.6
1973	15.150	12.4
1974	15.970	13.4
1975	12.012	13.5
1976	14.285	14.1
1977	19.037	17.8
1978	21.135	18.1

Source: American Iron and Steel Institute Annual Statisical Report, various issues.

Table A-14.

1968 VRA IMPORT LEVELS

Steel Mill Products

(Thousands of net tons)

Year	Total	Japan	E.C.S.C.	R.O.W.
1969	14,000	5,750	5,750	2,520
1970	14,700	6,027	6,027	2,646
1971	15,435	6,328	6,328	2,778

1972 VRA IMPORT LEVELS

Steel Mill Products

(Thousands of net tons)

Year	Japan	E.C.S.C.*
1972	6,498	8,014
1973	6,661	8,094
1974	6,827	8,296

E.C.S.C. - Belgium, Luxembourg, France, West Germany, Netherlands, Italy
* - including United Kingdom

R.O.W. - Rest of World

Source: Hogan, William T., S.J., The 1970's: Critical Years for Steel, Lexington Books, D.C. Heath and Company, Lexington, Massachusetts, Toronto, 1972, p.55.

Table A-15.

JAPANESE STEEL MILL PRODUCT EXPORTS TO U.S.

(Net Tons x 10^3)

Year	Carbon	Alloy	Stainless
1965	4,311	55*	52
1966	4,708	78*	65
1967	4,315	85*	68
1968	7,080	131	83
1969	6,000	167	86
1970	5,674	158	103
1971	6,576	216	116
1972	6,176	204	61
1973	5,420	169	48
1974	5,934	146	79
1975	5,582	170	93
1976	7,696	196	93
1977	7,468	256	96
1978	6,120	270	96

Source: 1970-1978: American Iron and Steel Institute, Annual Statistical Report, various issues. Alloy and Stainless 1965-1969: Essentiality of Specialty Steels To National Interest, Hearing, 92nd Congress, April 7, 1972, pp. 98,110,172.

* - estimated

Table A-16.

JAPANESE STEEL MILL PRODUCT EXPORTS TO U.S.

(Percent)

Year	Carbon	Alloy	Stainless
1965	97.6	1.2	1.2
1966	97.1	1.6	1.3
1967	96.6	1.9	1.5
1968	97.1	1.8	1.1
1969	96.0	2.7	1.4
1970	95.6	2.7	1.7
1971	95.2	3.1	1.7
1972	95.9	3.2	0.9
1973	96.2	3.0	0.8
1974	96.3	2.4	1.3
1975	95.5	2.9	1.6
1976	96.4	2.5	1.2
1977	95.5	3.3	1.2
1978	94.4	4.2	1.5

Table A-17.

TOTAL STEEL MILL PRODUCT IMPORTS TO U.S.

(Thousands of net tons)

Year	Carbon	Alloy	Stainless
1965	10,169	101	113
1966	10,459	157	137
1967	11,136	170	149
1968	17,486	300	174
1969	13,514	338	182
1970	12,839	349	177
1971	17,697	415	192
1972	17,084	448	149
1973	14,587	434	128
1974	15,380	413	176
1975	11,398	448	167
1976	13,627	483	175
1977	18,549	580	178
1978	20,181	754	200

Source: 1970-1978: American Iron and Steel Institute Annual Statistical Report, various issues. Alloy and Stainless 1965-1969: Essentiality of Specialty Steels To National Interest, Hearing, 92nd Congress, April 7, 1972, pp. 98,110,172.

Table A-18.

TOTAL STEEL MILL PRODUCT IMPORTS TO U.S.

(Percent)

Year	Carbon	Alloy	Stainless
1965	97.9	1.0	1.1
1966	97.3	1.5	1.3
1967	97.2	1.5	1.3
1968	97.4	1.7	1.0
1969	96.3	2.4	1.3
1970	96.1	2.6	1.3
1971	96.7	2.3	1.0
1972	96.6	2.5	0.8
1973	96.3	2.9	0.8
1974	96.3	2.6	1.1
1975	94.9	3.7	1.4
1976	95.4	3.4	1.2
1977	96.1	3.0	0.9
1978	95.5	3.6	0.9

Table A-19.

U.S. STEEL MILL SHIPMENTS

(Thousands of net tons)

Year	Carbon	Alloy	Stainless
1965	84,118	7,669	879
1966	81,089	7,973	933
1967	76,042	7,018	837
1968	83,221	7,816	819
1969	85,106	7,861	910
1970	83,145	6,944	709
1971	79,306	7,014	718
1972	83,173	7,777	855
1973	100,924	9,372	1,134
1974	97,948	10,179	1,345
1975	70,764	8,436	757
1976	80,320	8,108	1,019
1977	81,268	8,761	1,118
1978	86,187	10,557	1,191

Source: American Iron and Steel Institute Annual Statistical Report, various issues.

Table A-20.

U.S. STEEL MILL SHIPMENTS

(Percent)

Year	Carbon	Alloy	Stainless
1965	90.8	8.3	0.9
1966	90.1	8.9	1.0
1967	90.6	8.4	1.0
1968	90.6	8.5	1.0
1969	90.6	8.4	1.0
1970	91.6	7.6	0.8
1971	91.1	8.1	0.8
1972	90.6	8.5	0.9
1973	90.6	8.4	1.0
1974	89.5	9.3	1.2
1975	88.5	10.6	0.9
1976	89.5	9.4	1.1
1977	89.2	9.6	1.2
1978	88.0	10.8	1.2

Source: American Iron and Steel Institute Annual Statistical Report, various issues.

Table A-21.

STEEL MILL PRODUCT IMPORTS TO U.S.

(Thousands of net tons)

Year	Total	Japan	E.C.S.C.	R.O.W.
1969	14,034	6,253	5,200	2,581
1970	13,364	5,935	4,573	2,856
1971	18,034	6,908	7,156	3,970
1972	17,681	6,440	7,779*	3,462
1973	15,150	5,637	6,510*	3,003
1974	15,970	6,159	6,424*	3,387

IMPORTS RELATIVE TO VRA CEILING

(Percent)

Year	Japan	E.C.S.C.
1969	108.7	90.4
1970	98.5	75.9
1971	109.2	113.1
1972	99.1	97.1
1973	84.6	80.4
1974	90.2	77.4

Source: American Iron and Steel Institute Annual Statistical Report, various issues.

* - Including United Kingdom

Table A-22.

U.S. STEEL INDUSTRY

(Millions on net tons)

Year	Raw Steel Capacity	Finished Steel Capacity	Capacity Utilzation (Percent)
1968	155.00	91.9	84.8
1969	155.50	93.9	90.8
1970	155.50	90.8	84.6
1971	156.20	87.0	77.1
1972	154.60	91.8	86.1
1973	155.00	111.4	97.3
1974	155.57	109.5	93.7
1975	156.50	80.0	74.5
1976	159.00	89.4	80.1
1977	158.00*	91.1	78.4
1978	158.00**	97.9	86.6

Source: Raw steel capacity and capacity utilization rates: Prices and Costs in the U.S. Steel Industry, Council on Wages and Prices, 1977.

* - American Iron and Steel Institute

** - Estimate

Finished steel production: American Iron and Steel Institute, Annual Statistical Report, various issues.

Table A-23.

U.S. STEEL INDUSTRY

Year	Yield* (Percent)	3 Year Moving Average
1968	69.8	67.6
1969	66.4	67.4
1970	69.0	68.4
1971	72.3	69.2
1972	68.9	70.1
1973	73.9	71.1
1974	75.1	72.6
1975	68.5	72.5
1976	69.8	71.1
1977	72.7	70.3
1978	71.6	71.4

* - Finished steel production / Raw steel production

Table A-24.

UNITED STATES

(Thousands of net tons)

Year	Total Supply*
1968	107,646
1969	102,682
1970	97,100
1971	102,515
1972	106,613
1973	122,528
1974	119,609
1975	89,016
1976	101,078
1977	108,451
1978	116,648

* - Steel supply = USSI finished steel shipments
- U.S. finished steel exports
+ U.S. finished steel imports

Source: American Iron and Steel Institute, Annual Statistical Report, various issues.

Table A-25.

JAPANESE STEEL MILL PRODUCT EXPORTS TO U.S.

(Percent of Total Exports to U.S.)

(3 Year Moving Average)

Year	Total Steel Mill Products
1968	41.6
1969	41.4
1970	43.2
1971	42.2
1972	39.5
1973	37.1
1974	37.4
1975	41.5
1976	47.7
1977	48.4
1978	42.4

Table A-26.

JAPANESE STEEL MILL PRODUCT EXPORTS TO U.S.

(Percent)

(3 Year Moving Average)

Year	Carbon	Alloy	Stainless
1968	96.9	1.8	1.3
1969	96.6	2.1	1.3
1970	96.2	2.4	1.4
1971	95.6	2.8	1.6
1972	95.6	3.0	1.4
1973	95.8	3.1	1.1
1974	96.1	2.9	1.0
1975	96.0	2.8	1.2
1976	96.1	2.6	1.4
1977	95.8	2.9	1.3
1978	95.4	3.3	1.3

Table A-27.

USSI CAPITAL EXPENDITURE PROJECTIONS 1978-1985

(Billions of Current Dollars)

Source	Annual Growth Rate (%)	Total	Annual Expenditure
Harry Holiday	2.25	50.4	6.3
A.D. Little & Co.	0.00	28.9	3.6
	1.00	33.8	4.2
	2.00	44.2	5.5
	3.00	58.3	7.3
A. Solomon	-	32.0	4.0
E. Speer	2.25	48.2	6.0

Table A-28.

USSI CAPITAL EXPENDITURES

(Millions of Current Dollars)

Year	Total	Environmental Control	Steel and Nonsteel
1968	2,307	102	2,205
1969	2,047	138	1,909
1970	1,736	183	1,553
1971	1,425	162	1,263
1972	1,174	202	972
1973	1,400	100	1,300
1974	2,115	199	1,916
1975	3,179	453	2,726
1976	3,253	489	2,764
1977	2,858	535	2,323
1978	2,538	458	2,080

Source: American Iron and Steel Institute Annual Statistical Report, various Issues.

APPENDIX B

Trade Act of 1974, Title III - Relief From Unfair Trade Practices. Chapter 2 - Antidumping Duties, SEC. 321. Amendments To The Antidumping Act of 1921.

"Exporter's Sales Price"

Foreign Market Value

(b) Whenever the Secretary has reasonable grounds to believe or suspect that sales in the home market of the country of exportation, or, as appropriate, to countries other than the United States, have been made at prices which represent less than the cost of producing the merchandise in question, he shall determine whether, in fact, such sales were made at less than the cost of producing the merchandise. If the Secretary determines that sales made at less than cost of production (1) have been made over an extended period of time and in substantial quantities, and (2) are not at prices which permit recovery of all costs within a reasonable period of time in the normal course of trade, such sales shall be disregarded in the determination of foreign market value. Whenever sales are disregarded by virtue of having been made at less than the cost of production and the remaining sales, made at not less than cost of production, are determined to be inadequate as basis for the determination of foreign market value, the Secretary shall determine that no foreign market value exists and employ the constructed value of the merchandise in question.

(c) If available information indicates to the Secretary that the economy of the country from which the merchandise is exported is state-controlled to an extent that sales of offers of sales of such or similar merchandise in that country or to countries other than the United States do not permit a determination of foreign market value under subsection (a). The Secretary shall determine the foreign market value of the merchandise on the basis of the normal costs, expenses and profits as reflected by either -

(1) the prices determined in accordance with subsection (a) and section 202, at which such or similar merchandise of a non-state-controlled-economy country or countries is sold either (A) for consumption in the home market of that country or countries, or (B) to other countries, including the United States; or

(2) the constructed value of such or similar merchandise in a non-state-controlled-economy country

or countries as determined under section 206.

Source: United States Statutes at Large, 92nd Congress, 2d Session, 1974, Vol. 88, Part 2, Public Laws, Private Laws, Concurrent Resolutions, Proclamations, pp. 2046-2047.

APPENDIX C

1968 VRA

Source: Hogan, William T., S.J., The 1970's: Critical Years For Steel, Lexington Books, D.C. Heath and Company, Lexington, Massachusetts, Toronto, 1972, pp. 55-58.

December 23, 1968

To: The Honorable Secretary of State
Washington 25, D.C., U.S.A.

From: Yoshihiro Inayama, Chairman
Japan Iron & Steel Exporter's Association

Subject: Statement of the Intention of the Japanese Steel Industry

Statement of the Intention of
the Japanese Steel Industry

1. With the desire to assist in the maintenance of an orderly market for steel in the United States, the nine leading steel companies of Japan, namely, Yawata Iron & Steel Co., Ltd., Fuju Iron & Steel Co., Ltd., Nippon Kokan Kabushiki Kaisha, Kawasaki Steel Corporation, Sumitomo Metal Industries, Ltd., Kobe Steel Works, Ltd., Nisshin Steel Co., Ltd., Osaka Iron & Steel Co., Ltd., and Nakayama Steel Works, Ltd. gave assurances in their statement of July 5, 1968, that their steel mill product shipments from Japan to the United States would not exceed 5.5-million metric tons during Japanese fiscal year 1968. These nine companies account for approximately 85 percent of all Japanese steel mill products shipped to the United States. In the light of subsequent events and as a result of discussions concerning this matter with the representatives of the Government of the United States of America, they now want to make a new statement to the following effect.

2. With greater understanding of market conditions for steel in the United States, and with the cooperation of the medium and small steelmakers of Japan which account for the remaining 15 percent of shipments to the United States the same nine leading steel companies wish to state their intention, subject to measures permitted by the laws and regulations of Japan, to limit the Japanese shipments of steel mill products to the United States to a total of 5,750,000 net tons during calendar year 1969.

3. During the subsequent two calendar years (through 1971), it is also their intention to confine the Japanese shipments within limits which would represent, at most, a 5

percent increase over 5,750,000 net tons in 1970 and over 6,037,500 net tons in 1971, depending upon demand in the United States market and the necessity to maintain orderly marketing therein. During this period the Japanese steel companies will try not to change greatly the product mix and pattern of distribution of trade as compared with the present.

4. This statement is made upon the assumptions: i) that the total shipments of steel mill products from all the steel exporting nations to the United States will not exceed approximately 14,000,000 net tons during 1969, 105 percent of 14,000,000 net tons in 1970, and 105 percent of 14,700,000 net tons in 1971; ii) that the United States will take no action, including increase of import duties, to restrict Japanese steel mill product exports to the United States; and iii) that the above action by the Japanese steel companies does not infringe upon any laws of the United States of America and that it conforms to international laws.

s/Yoshihiro Inayama
Chairman
Japan Iron & Steel Exporter's
Association

December 23, 1968

The Honorable Secretary of State
New State Building
Washington 25, D.C.
U.S.A.

Sir,

The association of the steel producers of the ECSC united in the "Club des Siderurgistes," to wit:

-Associazione Industrie Siderurgiche Italiane ASSIDER, Milan represented by Prof. Dr. Ernesto Manuelli
-Chambre Syndicale de la Siderurgie Francaise, Paris represented by the President, Mr. Jacques Ferry
-Groupement des Hauts Fourneaux et Acieries Belges, Brussels represented by the President, Mr. Pierre van der Rest
-Groupement des Industries Siderurgiques Luxembourgeoises, represented by the President, Mr. Rene Schmit/Luxembourg
-Vereniging de Nederlandse Izer-en Staalproducerende Industria, represented by Mr. Evert van Veelen/Ijmuiden
-Wirtschaftsvereignigung Eisen- un Stahlindustrie, Dusseldorf represented by the President, Bergassessor Dr. Hans-Gunther Shol

referring to the repeated talks they have had in this matter with representatives of the Government of the United States in behalf of the sustenance of liberal international trade in steel and to assist in the maintenance of an orderly market for steel in the United States declare the following:

1. It is their intention to limit the total ECSC deliveries of steel mill products, i.e., finished rolled steel products, semis, hot rolled strip, tubes, and drawn wire products, to the United States to 5,750,000 net tons during the calendar year 1969.

2. It is also their intention in the calendar years 1970 and 1971, to confine their deliveries within limits which would at the utmost represent for the year 1970 a five percent increase over 5,750,000 net tons for the year 1971, a five percent increase over 6,037,500 net tons.

During the named periods the ECSC producers will try to maintain approximately the same product mix and pattern of distribution as at present.

This statement is based on the assumption

A) that the total shipments of steel mill products (finished rolled steel products, semis, hot rolled strip, tubes, and drawn wire products) from all the steel exporting nations to the USA will not exceed approximately 14-million tons during 1969, and five percent over 14-million net tons in 1970, and five percent over 14.7-million net tons in 1971; and

B) that the United States will take no action to restrict ESCS steel mill product exports to the USA like

a) quota system
b) increase of import duties
c) other restrictions on the import of steel mill products to the USA.

This proposal of the ECSC steel producers is made provided that it does not infringe on any laws of the United States and that it conforms to international laws.

/s/-Ernesto Manuelli-	/s/-Jacques Ferry-
/s/-Pierre van der Rest-	/s/-Rene Schmit-
/s/-Every van Veelen-	/s/-Hans-Gunther Shol-

January 14, 1969

The Honorable Wilbur D. Mills
Ways and Means Committee
House of Representatives

Dear Mr. Chairman:

The President has asked me to transmit to you communications received from the steel industry of Japan and the steel industries of the European Coal and Steel Community (ECSC) expressing the intentions of these industries to limit their exports of steel mill products to the United States in the years 1969 through 1971.

We estimate that as a result of the export limitations of the Japanese and ECSC producers, which together provide about 82 percent of our steel imports, total imports will amount to about 14-million net tons in 1969, about 14.7-million net tons in 1970, and about 15.4-million net tons in 1971. Other major foreign producers have not formally offered to cooperate in the voluntary export limitations, but as a practical matter, are expected to maintain their exports at levels which yield the estimates stated above.

Sincerely yours,

/s/ Dean Rusk

1972 VRA

Source: Hogan, William T., S.J., The 1970's: Critical Years For Steel, Lexington Books, D.C. Heath and Company, Lexington, Massachusetts, Toronto, 1972, pp. 65-71.

May 2, 1972

Dear Mr. Secretary:

The Associations of the Steel Producers of the European Coal and Steel Community (ECSC) and the Association of Steel Producers of the United Kingdom, declare their intention to limit through December 31, 1974, exports of steel mill products to the United States. The following are the terms under which these exports will be regulated:

1. Total Exports and Growth Rate

The total quantity of steel mill products to be shipped to the United States by the above-emntioned producer associations will not exceed 7,270,000 metric tons (8,013,794 net tons) during calendar year 1972. The growth rate of exports of steel mill products will not exceed one percent (1%) in calendar year 1973 over the calendar year 1972 limit of shipments and the growth rate of exports of steel mill products will not exceed two and one-half percent (2.5%) in 1974 over the calendar year 1973 limit of shipments.

In accordance with this growth rate, such shipments will not exceed 7,342,000 metric tons (8,093,573 net tons) in calendar year 1973 and 7,525,550 metric tons (8,295,910 net tons) in calendar year 1974.

The above-mentioned producer associations will endeavor to insure that shipments in either calendar semester of a given year will be held to no more than sixty percent (60%) of the total annual quantitative limit.

2. Product Mix

Within the foregoing limitations, the above-mentioned producer associations will limit their shipments of stainless, alloy and high speed steel mill products which are covered by the ECSC Treaty to total quantities not to exceed the following (metric tons)

Stainless Steel Mill Products

1972	16,873
1973	15,871
1974	16,268

Alloy Steel Mill Products

1972	77,927
1973	68,351
1974	70,059

High Speed Steel Mill Products

1972	120
1973	99
1974	101

Within these total quantities the above-mentioned producer associations will not depart significantly from the product mix in each calendar year as compared with the pattern of such shipments to the United States over recent years.

Concerning high speed steel mill products and stainless and alloy steel mill products which are not covered by the ECSC Treaty, the above-mentioned producer associations will use their best efforts, consistent with legal requirements, to induce producers who are not members of the above-mentioned producer associations to limit their shipments to the following quantities (metric tons).

High Speed Steel Mill Products

1972	360
1973	370
1974	379

Stainless Steel Mill Products

1972	7,211
1973	6,633
1974	6,800

Alloy Steel Mill Products

1972	34,993
1973	35,034
1974	35,910

Exports of the aforementioned products will be regulated by reference to the classifications of the Brussels Tariff Nomenclature (BTN). A concordance of the BTN with the relevant classifications contained in tariff schedules concordance of the BTN with the relevant classifications contained in Tariff Schedules of the United States Annotated (TSUSA) is appended.

With respect to other catagories of steel mill products, the above-mentioned producer associations will generally maintain the product mix in each calendar year in accordance with the average shipments for the period 1969, 1970, 1971.

With reference to exports of cold finished steel bars, special efforts will be made, consistent with legal requirements, to confine shipments during calendar year 1972 to a level of not more than two and one-half percent (2.5%) greater than during calendar year 1970 and to maintain a growth rate of two and one-half percent (2.5%) of the preceeding year's limit during each of calendar years 1973 and 1974.

3. Fabricated Structural Steels

Such products are not considered steel mill products and are not within the limitations set forth in paragraph 1 above. However, with reference to shipments of fabricated structural steel products according to the definitions of the BTN, special efforts will be made, consistent with legal requirements, to confine the shipments by the aforementioned producer associations during during calendar year 1972 to a level not more than two and one-half percent greater than during calendar year 1970, outside the quantitative limit as described in paragraph one above, and to maintain a growth rate of two and one-half percent (2.5%) of the preceeding year's limit during each of calendar years 1973 and 1974.

Geographic Mix

During calendar years 1972,1973, and 1974, the above-mentioned producer associations will endeavor to the fullest extent possible to avoid growth in shipments of steel mill products to any particular customs region on United States (Atlantic Coast, Gulf Coast/Mexican Border, Pacific Coast, Great Lakes/Canadian Border, and off-shore regions) in excess of the approximate proportions of calendar years 1969, 1970, and 1971.

5. Consultations

The above-mentioned product associations, through their authorized representatives, hold themselves ready to consult with representatives, of the United States Government on any problem of question that may arise with respect to this voluntary restraint undertaking. They expect that, similarly, the United States Government would be prepared to consult with their representatives on any problem or question that may arise with respect to this voluntary restraint undertaking. They reserve the right to request consultation in the event that they consider they have been placed in a disadvantageous position with respect to other exporters of steel to the United States by developments in the international steel market taking place subsequent to entering this undertaking, or if developments in the international steel market should take place which could substantially impair the carrying out of this undertaking. Similarly, they recognize that the United States Government may request consultation if it considers that developments in the international steel market may have taken place during the term of this undertaking which substantially affect any of the provisions of this arrangement.

The above-mentioned producer associations reserve the right to request consultation with respect to the exclusion in particular situations from the export limitations quantity in paragraph 1 above of shipments of large-diameter line pipe.

6. This voluntary restraint undertaking is based on the following assumptions:

a. The provisions of paragraphs 1, 2, 3, 4, and 5 of this letter should not have disadvantageous effects for the above-mentioned producer associations as compared with the undertakings made or to be made by producers of other countries concerning their exports to the United States market.

b. The United States Government will take no unilateral actions to restrict the quantity of steel mill products to be imported by the United States from Belgium, France, the German Federal Republic, Italy, Luxembourg, the Netherlands, and the United Kingdom, or to raise the tariffs thereon, including the new imposition of a surcharge, or to impose any other measure of similar effect.

c. This undertaking is made with the understanding that it is not in violation of any law of the United States or international rule, especially the provisions of the treaty establishing the European Coal and Steel Community and of decisions of the European Economic Commission.

Sincerely yours,

This letter is signed on behalf of the undermentioned association by:

1. Comite de la Siderurgie Delge KSJ Baron Van Der Rest, President

2. Wirtschaftsvereinigung Eisen und Stahl Industrie Hans-Jorg Sendler

3. Chambre Syndicale de la Siderurgie Francaise, M. Jacques Ferry, President

4. British Steel Corporation Mark Littman Deputy Chairman on behalf of Lord Melchett, Chairman

5. British Independent Steel Producers Association Sir Douglas Bruce-Gardner, Chairman

6. Associazione Industrie Siderurgiche Italiane "Assider" Dott Mario D'onofrio, Delegato Della Presidenza

7. Groupement de l'Industrie Siderurgiche Luxembourgeoise M. Rene Schmit, President

8. Vereniging de Ntderlandsche Ijzer in Staalproducerende Industrie, M. Evert Van Veelan, Chairman

May 4, 1972

Dear Mr. Secretary:

In order to assist in the maintenance of an orderly market for steel in the United States, the Japan Iron and Steel Exporters' Association (hereinafter referred to as the Association) declares its intention, with the cooperation of associations for steel mill products not covered by the Association, to extend through December 31, 1974, its limitations on steel mill product exports to the United States, as initiated by its memorandum of December 23, 1968. The following are the terms under which these exports will be regulated:

1. Total exports and growth rate. The total quantity of Japanese steel mill products to be shipped to the United States during calendar year 1972 will not exceed 5,895,000 metric tons.

The growth rate of exports of the aforementioned products will not exceed 2-1/2 percent per annum in each of the years 1973 and 1974 over the preceeding year's limit of shipments. In accordance with this growht rate, such shipments will not exceed 6,042,000 metric tons during calendar year 1973 and 6,193,000 metric tons during calendar year 1974.

Shipments in either semester (6-month period) of a given year will be held to no more than sixty (60) percent of the total annual quantative limit.

2. Product mix. Within the foregoing overall limitations, shipments of specialty steel mill products will be confined to total quantities not to exceed the following (in metric tons):

	1972	1973	1974
Stainless Steel	72,463	68,840	70,561
Tool Steel	893	915	938
Other Specialty Steel	155,935	141,901	145,448

With respect to the aforementioned specialty steel mill products, the Association will not depart significantly from the product mix in each calendar year as compared with the pattern of such shipments to the United States over recent years.

Since exports will be regulated by reference to Japanese customs clearance statistics, which are based upon the Brussels Nomenclature, Japanese classification of the above grades of steel will be used, provided that in the case of toool steel, a seperate consideration will be given to the shipments in accordance with the definitions of the Tariff Schedules of the United States Annotated.

With respect to other catagories of steel mill products, the Association will generally maintain the product mix in each calendar year in accordance with the average shipments for the period 1969, 1970, and 1971.

With special reference to exports of cold finished carbon steel bars, shipments will be confined during during calendar year 1972 to a level of not more than 2-1/2 percent greater than during 1970. A growth rate of 2-1/2 percent of the preceeding year's limit will not be exceeded during calendar years 1973 and 1974.

3. Fabricated and structural steels. Such products are not considered steel mill products and are not within the limitations set forth in paragraph 1 above. However, with reference to shipments of fabricated structural steel products, as defined below, according to the definitions of the Japanese customs tariff - namely: electric poles (towers) and parts thereof, of iron or steel: steel towers and parts thereof, of iron or steel. n.e.s.: bridges and parts thereof, of iron or steel: flood gates and parts thereof, of iron or steel, n.e.s.: structures and parts thereof, of iron or steel, n.e.s.: bars, rods, plates, sheets, tubes, pipes, and other materials, worked for structural use, of iron or steel - special efforts will be made to confine the shipments by Japanese steel producers during calendar year 1972 to a level of not more than 2-1/2 percent greater than during 1970,outside the quantitative limit as described in paragraph 1 above. A growth rate of 2-1/2 percent of the preceeding year's limit will not be exceeded during calendar years 1973 and 1974. It is understood that problems relating to the shipments of fabricated structural steels may be reviewed at the end of 1972 in accordance with paragraph 5.

4. Geographic mix. During calendar years 1972, 1973, and 1974, the Association will endeavor to the fullest extent possible to avoid growth in shipments of steel mill products to any particular custome region of the United States (Atlantic Coast, Gulf Coast-Mexican Border, Pacific Coast, Great Lakes-Canadian Border, and offshore regions) in excess

of the approximate proportions of calendar years 1969, 1970, and 1971. With specific reference to the Pacific Coast customs region, shipments will be confined to a level not exceeding one-third of total shipments of steel mill products to the United States.

5. Consultations. The Association through its authorized representatives, holds itself ready to consult with representatives of the United States Government on any problem or question that may arise with respect to this voluntary restraint undertaking. The Association expects that, similarly, the United States Government would be prepared to consult with the representatives of the Association on any problem or question that may arise with respect to this voluntary restraint undertaking.

The Association reserves the right to request consultation with respect to the exclusion from the export limitation quantity in paragraph 1 above of shipments of large-diameter line pipe (48-inch diameter or wider) when such pipe cannot be supplied from domestic production in the United States.

6. This voluntary restraint undertaking is based on the following assumptions:

A. That, in consideration to the voluntary restraint undertaking in the existing memorandum of December 23, 1968, the terms of the undertaking of paragraphs 1, 2, 3, 4, and 5 above as well as the Association's share of total United States imports of steel mill products, will not be disadvantageous to the Association as compared with the undertakings made or to be made by the members of the Eurpoean Coal and Steel Community.

B. That the United States Government will take no unilateral actions to restrict the quantity of United States imports of steel mill products, or to raise the tariffs thereon, including any new imposition of supplemental duties: and

C. That this undertaking is made with the understanding that it is not in violation of United States law or international law.

Yours sincerely,

/s/ Yoshihiro Inayama
Chairman, Japan Iron and Steel
Exporters Association

Office of the White House Press Secretary
Saturday, May 6, 1972

The White House
Statement by the President

I am pleased to announce that the steel producers of Japan, the European Community and the United Kingdom have expressed their intention to restrain on a voluntary basis their exports of steel mill products to the United States during the next three years.

This welcome development - which will lead to the preservation of jobs in our domestic steel industry - successfully concludes more than a year of discussion.

For some time, I have been deeply concerned about the serious problem that excessive imports have posed for our steel workers and to our steel industry. Consequently, I directed that efforts be made to limit the impact of steel imports.

The deputy Under Secretary of State for Economic Affairs, Nathaniel Samuels, undertook discussions with the Japanese and Auropean steel producers with respect to their renewal - on improved terms - of the voluntary restraints on steel exports.

After more than a year's effort, Mr. Samuels has succeeded in this important endeavor. The Secretary of State has advised me that he has received communications from the steel producers in these countries in which they pledge a three-year restraint - with improved terms - of their voluntary limits on their steel exports to the United States.

This undertaking represents a substantial improvement over the arrangements of the last three years and will enable domestic steel producers to make their plans with confidence that imports will not be disruptive in the domestic market, it will help preserve the jobs of American steel workers.

I am especially pleased that this undertaking was reached on a voluntary basis. Such statesmanlike cooperation is vital to our mutual efforts to build a more equitable and a more progressive system of international trading agreements.

LIST OF REFERENCES

1. Kiyoshi Kawahito, The Japanese Steel Industry (Washington: Praeger Publishers, 1972), p. 4.

2. T.F.M. Adams, and Iwao Hoshii, A Financial History of the New Japan (Palo Alto: Kudansha International Ltd., 1972), p. 34-37.

3. Isiah Frank, ed., The Japanese Economy in International Perspective (Baltimore: The Johns Hopkins University Press, 1975), p. 81.

4. Kiyoshi Kawahito, op. cit., p. 26.

5. P.B. Stone, Japan Surges Ahead, (New York: Frederick A. Praeger, 1969), p. 83.

6. M.Y. Yoshino, Japans Multinational Enterprises (Cambridge Harvard University Press, 1976), p. 17.

7. Ibid., p. 17.

8. David Ignatius, "Who Killed the Steel Industry?," The Washington Monthly, 1979 (reprint), p. 6.

9. Putnam Hayes and Bartlett, Inc., Economics of International Steel Trade: Policy Implications for the United States, (Washington: American Iron and Steel Institute, [1977]), p. 13.

10. Richard M. Duke, et al, Staff Report on the United States Steel Industry and its International Rivals: Trends and Factors Determining International Competitiveness, U.S. Federal Trade Commission, Bureau of Economics, (Washington, D.C.: U.S. Government Printing Office, 1977) pp. 53-54.

11. David Ignatius, op. cit., p. 5.

12. Richard M. Duke, op. cit., p. 53.

13. Ibid., p. 56.

14. Richard M. Duke, op. cit., p. 68.

15. "Environmental Control Costs Climb, and Compliance is Still Difficult to Define," 33 Metal Producing, June 1978, p. 71.

16. William T. Hogan, The 1970's: Critical Years for Steel (Lexington, Massachusetts: D.C. Heath and Company, 1972), p. 52.

17. Ibid., p. 52.

18. Putnam, Hayes and Bartlet, op. cit., p. 9.

19. Lloyd Herberg, "A Nation Watches as Steel Crisis Strikes Home," Steel '77, third quarter 1977, p. 5.

20. American Metals Market, November 21, 1977, p. 1.

21. Ibid., p. 1.

22. "Trigger Prices Are Set, But Who's Under the Gun?," Iron Age, January 16, 1978, p. 30.

23. Interview with Bill Ward, U.S. Treasury Department, Golden, Colorado (telephone) 16 January 1979.

24. Interview with John Nolan, U.S. Treasury Department, Office of Special Programs, Golden, Colorado (telephone), 10 May 1979.

25. Interview with Lynn Holec, U.S. Treasury Department, Office of Special Programs, Golden, Colorado (telephone), 19 June 1979.

26. Tom Dulaney, "Particulars on the Workings of Trigger Prices," Iron Age, March 6, 1978, p. 23.

27. "Steel, Washington Triggers a Bouyant Mood ," Business Week, January 8, 1979, p. 64.

28. "Steel," Forbes, January 8, 1979, p. 108.

29. William T. Hogan, op. cit., p. 54.

30. William T. Hogan, op. cit., p. 55.

31. William T. Hogan, op. cit., p. 62.

32. Interview with D.F. Anderson, Manager Economic Affairs, International Iron and Steel Institute, Colorado Springs, Colorado, 30 September 1978.

33. William T. Hogan, "85% Steel Capacity Vital to Profit: Hogan," American Metal Market, 24 November 1977, p. 1.

34. American Iron and Steel Institute, Imports of Iron and Steel Products by Countries of Origin (monthly), December 1978.

35. Tom Stunza, "Bethlehem Presses Tax Reforms," American Metals Market, vol. 86, no. 168, p. 1.

36. Revenue Act of 1978, Commerce Clearing House, Chicago 1979, p. 60.

37. Anthony M. Solomon, Report to the President, A Comprehensive Program For the U.S. Steel Industry.

38. Charles D. Kuehner, ed., Capital and Job Formation; our nations 3rd century challenge (Homewood, Illinois: Dow Jones-Irwin, 1978), p. 148.

39. Ibid., p. 145.

40. "Environmental Control Costs Climb, and Compliance is Still Difficult to Define," 33 Metal Producing, June, 1978, p. 73.

41. Thomas C. Graham, "Management Productivity," American Iron and Steel Institute General Session, New York, May 25, 1978, p. 9.

42. Paul Cathey, "What Managers Will Need to Survive in the 80's," Iron Age, 22 January 1979, p. 22.

43. Ibid., p. 6.

44. Jerrold Mitchell and Andre Sharon, "The Currency Factor," Financial World, 1 March 1978, p. 34.

45. "The Case for a Stronger Dollar," Business Week, 2 October 1978, p. 97.

46. Interview with Lynn Holec, op. cit.

47. Ibid.

48. Ibid.

49. "Steel, Washington Triggers a Bouyant Mood," *op. cit.*, p. 64.

50. "Steel, Japan No. 1 and Steel Gaining," *Financial Times of London*, (reprint), April 30-May 6, 1979, p. 2.

51. Sheldon Wesson, "Trigger Price Calculations Questioned by AISI," *American Metals Market*, 22 May 1979, p. 3.

52. See Harry Holiday, *The Capital Requirements of the Domestic Steel Industry 1978-1985*, American Iron and Steel Institute press briefing, May 23, 1978; and Charles D. Kuehner, ed., *Capital and Job Formation: Our Nation's 3rd Century Challenge*, (Homewood, Illinois, Dow Jones-Irwin, 1978), p. 139.

53. "Instead of Spending, a Shrinking Plant," *Business Week*, October 17, 1977, p. 206.

54. Harry Holiday and Charles D. Kuehner, *op. cit.*

55. Harry Holiday, *op. cit.*

56. Arthur D. Little, Inc., *Steel and the Environment - A Cost Impact Analysis* (Washington: American Iron and Steel Institute, [May 1978]).

57. Charles D. Kuehner, *op. cit.*, p. 25.

58. Ibid., p. 292.

59. *Steel Industry Economics and Federal Income Tax Policy* (Washington: American Iron and Steel Institute [June 1975], p. 39.

60. Ibid., p. 40

61. *Tax Guide for Small Businesses* (Washington: U.S. Internal Revenue Service, [1979]), p. 414.

62. "Steel's Need - $50 Billion, Foreign Competition Forces More Spending," *Business Week*, September 22, 1975, p. 57.

63. Interview with Ralph Thompson, U.S. Department of Commerce, Golden, Colorado (telephone), 25 May 1979.

64. Thomas C. Graham, *op. cit.*, p. 5.

65. The diagrams used in the economic analysis are from; Walter, Ingo, *International Economics*, the analysis is from; Ingo Walter and also Kindleberger, Charles P., *International Economics*.

66. "Trigger Prices Fuel Inflation Disrupt Steel Trade: European Steelmakers Forced to Close Plants, Lay Off Workers," American Institute for Imported Steel, (letter), January 22, 1979.

67. Interview with Bill Ward, *op. cit.*, 16 January 1979.

68. Interview with D.F. Anderson, op. cit., 16 January 1979.

69. Reichard, Robert S., "Waiting for the Stats to Match Reality," *Purchasing World*, November 1978, (reprint).

70. Wexler, Imanuel, *Fundamentals of International Economics*, (New York: Random House, 1968), p. 256.

BIBLIOGRAPHY

Books

Adams, T.F.M., and Hoshii, Iwao, A Financial History of the New Japan. Palo Alto: Kodansha International Ltd., 1972.

Allen, G.C., Japan's Economic Recovery, Oxford University Press, New York, 1958.

Baldwin, Robert E., Nontariff Distortions of International Trade, The Brookings Institution, Washington, D.C., 1970.

Blair, John M., Economic Concentration, Structure, Behavior, and Public Policy, Harcourt Brace Jovanovich, Inc., New York, 1972.

Blough, Roger M., The Washington Embrace of Business, Columbia University Press, New York, 1975 (1974 Benjamin F. Fairless Memoriald Lectures).

Break, George F. and Pechman, Joseph A., Federal Tax Reform, The Brookings Institution, Washington, D.C., 1975.

Broude, Henry W., Steel Decisions and the National Economy, Yale University Press, New Haven, Connecticut, 1963.

Bryant, William E., Japanese Private Economic Diplomacy, Praeger Publishers, New York, 1975.

Burn, Duncan, The Steel Industry 1939-1959, Cambridge at the University Press, 1961.

Caves, Richard E., and Vekusu, Masu, Industrial Organization in Japan, The Brookings Institution, Washington, D.C., 1976.

Colberg, Marshall R., Forbush, Cascomb, R., Whitaker, Gilbert R. Jr., Business Economics, Principles and Cases, Richard D. Irwin, Inc., Homewood, Illinois, 1975.

Curtis, Thomas B., and Vastine, John Robert Jr., The Kennedy Round and the Future of American Trade, Praeger Publishers, Washington, 1971.

Frank, Isiah, ed., The Japanese Economy in International Perspective. Baltimore: The Johns Hopkins University Press, 1975.

Grubel, Herbert C., International Economics, Richard D. Irwin, Inc., Homewood, Illinois, 1977.

Hawkins, Robert G., Walter, Ingo, The United States and International Markets, Lexington Books, Lexington Massachusetts, 1972.

Hogan, William T., S.J., Economic History of the Iron and Steel Industry in the United States, Lexington Books, D.C. Heath & Company, Lexington, Massachusetts, 1971.

Hogan, William T., The 1970's: Critical Years for Steel. Lexington, Massachusetts: D.C. Heath and Company, 1972.

Klein, Phillip A., and Gordon, Richard L., Steel Industry, The Pennsylvania State University, University Park, Pennsylvania, 1971.

Kindleberger, Charles P., International Economics. Homewood, Illinois: Richard D. Irwin, Inc., 1973.

Kawahito, Kiyoshi, The Japanese Steel Industry. Washington: Praeger Publishers, 1972.

Komiya, Ryutaro (editor), Ozaki, Robert S., (translator), Postwar Economic Growth in Japan, University of California, Press, Los Angeles, 1966.

Kreinin,Mordechai E., International Economics, A Policy Approach, 2nd ed., Harcourt Brace Jovanovich, Inc., New York, 1975.

MacPhee, Craig R., Restrictions on International Trade in Steel, Lexington Books, D.C. Heath and Company, Lexington, Massachusetts, 1974.

McManus, George, The Inside Story of Steel Wages and Prices, 1959-1967, Chilton Book Company, Philadelphia, 1967.

Manley, John F., American Government and Public Policy, MacMillan Publishing Co., Inc., New York, 1976.

Mansfield, Edwin, Microeconomics Theory and Applications, (New York: W.W. Norton and Company), 1979.

Mintz, Isle, U.S. Import Quotas: Costs and Consequences, American Enterprise Institute for Public Policy Research, Washington, l.C., 1973.

Patrick, Hugh and Rosovsky, Henry, Asia's New Giant, How the Japanese Economy Works, The Brookings Institution, Washington, D.C., 1976.

Pechman, Joseph A., Federal Tax Policy, Revised Edition, The Brookings Institution, Washington, D.C., 1971.

Powers, Edward J., Jr., The Japanese Commercial Banking Industry, St. John's University Press, Jamaica, New York, 1971.

Scammell, W.M., International Trade and Payments (New York: St. Martin's Press), 1974.

Schiffer, Hubert F., The Modern Japanese Banking System, University Publishers Incorporated, New York, 1962.

Stone, P.B., Japan Surges Ahead. New York: Frederick A. Praeger, 1969.

Tax Institute of America, Tax Incentives, Heath Lexington Books, D.C. Heath and Company, Lexington, Massachusetts, 1971.

Warren, Kenneth, The American Steel Industry 1850-1970, Clarendon Press, Oxford, England, 1973.

Wexler, Imanuel, Fundamentals of International Economics. New York: Random House, 1968.

Yamamura, Kozo, Economic Policy in Postwar Japan, University of California Press, Los Angeles, 1967.

Yoshino, M.Y., Japan's Managerial System, The MIT Press, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1968.

Yoshino, M.Y., Japan's Multinational Enterprises. Cambridge, Harvard University Press, 1976.

Interview

Anderson, D.F., Manager Economic Affairs, International Iron and Steel Institute, Colorado Springs, Colorado. Interview 30 September 1978.

Holec, Lynn, U.S. Treasury Department, Office of Special Programs, Golden, Colorado. Telephone interview, 19 June 1979.

Nolan, John, U.S. Treasury Department, Office of Special Programs, Golden, Colorado. Telephone interview, 10 May 1979.

Thompson, Ralph, U.S. Department of Commerce, Golden, Colorado. Interview, 25 May 1979.

Ward, Bill, U.S. Treasury Department, Golden, Colorado. Telephone interview, 16 January 1979.

Magazine

Cathey, Paul, "What Managers will Need to Survive in the 80's," Iron Age, 22 January, 1979.

Dulaney, Tom, "Particulars on the Workings on Trigger Prices." Iron Age, March 6, 1978.

"Environmental Control Costs Climb and Compliance is Still Difficult to Define," 33 Metal Producing, June 1978.

Faltermayer, Edmund, "How Made-in-America Steel can Survive," Fortune, 13 Feb. 1978, Vol. no. , pp. 122-130.

Herberg, Lloyd, "A Nation Watches as Steel Crisis Strikes Home." Steel '77, third quarter, 1977.

Ignatius, David, "Who Killed the Steel Industry?" The Washington Monthly, 1979 (reprint).

"Instead of Spending a Shrinking Plant," Business Week, October 17, 1977.

Mitchell, Jerrold and Sharon, Andre, "The Currency Factor," Financial World, 1 March 1978.

Reichard, Robert S., "Waiting for the Stats to Match Reality," Purchasing World, November 1978 (reprint)

"Steel." Forbes, January 8, 1979.

"Steel, Japan No. 1 and Steel Gaining," Financial Times of London (reprint), April 30-May 6, 1979.

"Steel, Washington Triggers a Bouyant Mood ." Business Week, Jan 8, 1979.

"Steel's Need - $50 Billion, Foreign Competition Forces More Spending." Business Week, September 22, 1975.

"Sumitomo, How the 'Keiretsu' pulls together to keep Japan strong," Business Week, 31 Mar 1975, #2374, p. 43-48.

"The Case for a Stronger Dollar," Business Week, 2 October, 1978.

"Trigger Prices are Set But Who's Under the Gun?" Iron Age, January 16, 1978.

Using Trading Companies in Exporting to Japan, Japan External Trade Organization (JETRO), Japan Trade Center, Los Agngles, NETRO marketing series 2, (1972), pp. 23.

Newspaper

American Metals Market, November 21, 1977, p. 1.

Hogan, William T., "85% Steel Capacity Vital to Profit: Hogan," American Metal Market, 24 November 1977, p. 1.

Stunza, Tom, "Bethlehem Presses Tax Reforms," American Metals Market, Vol. 86, No. 168, p. 1.

Wesson, Sheldon, "Trigger Price Calculations Questioned by AISI," American Metals Market, 22 May 1979.

Reports

Council on Wage and Price Stability, A Study of Steel Prices, U.S. Government Printing Office, Washington, D.C., July 1975, pp. 85.

Council on Wage and Price Stability, Prices and Costs in the United States Steel Industry, U.S. Government Printing Office, Washington, D.C., Oct. 1977, pp. 150.

Ford, Joseph W., The Steel Import Problem, Fordham University Press, New York, 1961, pp. 111 (Studies in Industrial Economics, no. 7)

Holiday, Harry, The Capital Requirements of the Domestic Steel Industry 1978-1985, American Iron and Steel Institute Press briefing, May 23, 1978.

Little, Arthur D., Inc., Steel and the Environment - A Cost Impact Analysis, Washington: American Iron and Steel Institute, May 1978.

Putnam, Hayes, and Barlett, Inc., Economics of International Steel Trade: Policy Implications for the United States. Washington: American Iron and Steel Institute, 1977.

Revenue Act of 1978, Commerce Clearing House, Chicago, 1979.

Solomon, Anthony M., Report to the President, A Comprehensive Program for the U.S. Steel Industry.

Steel Imports - A National Concern, American Iron and Steel Institute, Washington, D.C., 1970, pp. 97.

Steel Industry Economics and Federal Income Tax Policy. Washington: American Iron and Steel Institute, June 1975.

Tax Guide for Small Businesses. Washington: U.S. Internal Revenue Service, 1979.

U.S. Federal Trade Commission. Bureau of Economics. Staff Report on the United States Steel Industry and its International Rivals: Trends and Factors Determining International Competitiveness, by Richard M. Duke, et al, Washington, D.C.: U.S. Government Printing Office, 1977.

Miscellaneous

American Iron and Steel Institute, Imports of Iron and Steel Products by Countries of Origin (monthly), December 1978.

Graham, Thomas C., "Management Productivity," American Iron and Steel Institute General Session," New York, May 25, 1978.

"Trigger Prices Fuel Inflation, Disrupt Steel Trade; European Steelmakers Forced to Close Plants, Lay-Off Workers," American Institute for Imported Steel, January 22, 1979.