A Resurgence of the American Steel Industry?

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Introduction

The American steel industry underwent dramatic and traumatic changes during the past twenty years. We can observe a fall and rise (Hall, [1997]), or decline and renewal (Barnett and Crandall [1998]), of the industry.

The United States' crude steel production peaked in 1973, and then declined sharply, with rated capacity utilization falling to 48% in 1982. Through the 1980s, the industry went through stagnation, as well as struggling and restructuring. However, it has been in a phase of recovery and renewal since 1994.

A number of historical studies of the American steel industry are available: Adams [1990], Ahlbrandt [1996], Barnett [1986, 1998], Crandall [1981, 1998], D'Costa [1999], Hogan [1984, 1987, 1991, 1992, 1994], Hoerr [1988], Iverson [1997], Moore [1996], Preston [1991], Reuther [1988], Scherer [1996], Scheuerman [1986], Strohmeyer [1986], Tifferny [1988] and others.

I will divide this paper into the following sections: (I) Overview of the industry; (II) "Steel at the Crossroads" — The decline of the American steel industry; (III) American steel survival strategies; (IV) The amazing transformation of the American steel industry in the 1990s; and (V) A resurgence of the American steel industry?

I. Overview of the Industry

1. The American Steel Market — A Global View

(1) Apparent Steel Consumption

According to the International Iron and Steel Institute (IISI [1999]), global apparent steel consumption in 1999 was estimated at 698.8 million metric tons, and the share of the United States 15.6% of the world total, amounting to 108.8 million metric tons.

For most of the past two years, the global steel market has been depressed, with a resulting glut of steel on the world markets linked to the Asian economic crisis, and a consequent slide in steel prices.

In October 1999, the IISI announced a relatively optimistic forecast for global steel demand in 2000, amounting to 719.0 million metric tons, following steady growth in North America, better-than-expected expansion prospects in Europe, and signs of recovery in the Southeast Asian economies (Table 1).

Table 1 IISI Secretariat's estimated apparent steel consumption, short term

(million metric tons of steel products)

	1998	1999	% Change 98-99	2000
PR China	113.9	125.0	+9.7	130.0
Japan	70.3	68.3	−2.8	67.2
Korea	24.9	32.1	+28.9	34.6
Total Asia	**285.2**	**302.5**	**+6.0**	**311.4**
NAFTA	**143.0**	**134.6**	**−5.9**	**135.8**
United States	117.4	108.8	−7.3	109.9
Brazil	14.5	14.5	−0.0	15.9
Total S.America	**27.6**	**26.8**	**−2.9**	**29.0**
EU(15)	**137.0**	**134.6**	**−1.8**	**139.1**
Other Europe	35.1	35.4	+0.8	37.5
CIS	29.6	30.5	+3.0	31.3
Australia & NZ	6.7	6.5	−2.1	6.5
Africa	15.5	14.0	−9.5	14.2
Middle East	13.6	13.9	+2.2	14.2
World Total	693.3	698.8	+0.8	719.0

Source: International Iron and Steel Institute, [October 1999] (IISI-33 Annual Meetings and Conference)

(2) Crude Steel Production

According to the IISI's *Steel Statistical Yearbook* [1999], total world production of crude steel in 1998 was 777 million tons. American production was 97.7 million tons in the same year, making up 12.6% of the world total, and representing a decrease from the 14.2% it held in 1980.

It stands out as a remarkable fact that American crude steel production, which was once predominant in the world, decreased over the past two decades, reflecting a drastic contraction of domestic obsolete capacity.

(3) The World's Largest Steel Import Market

The United States' demand-supply gap for steel has increased dramatically. It widened from 15.5 million net tons in 1980 to 24.3 million net tons in 1985, and to 41.5 million net tons in 1998 (Figure 1).

This gap was covered by imports from the EU, Japan, CIS, Korea, Brazil and other countries which had excess supply. Today, the American steel market is the world's largest import-dependent market next only to the Asian countries.

2. The Development of the American Steel Industry

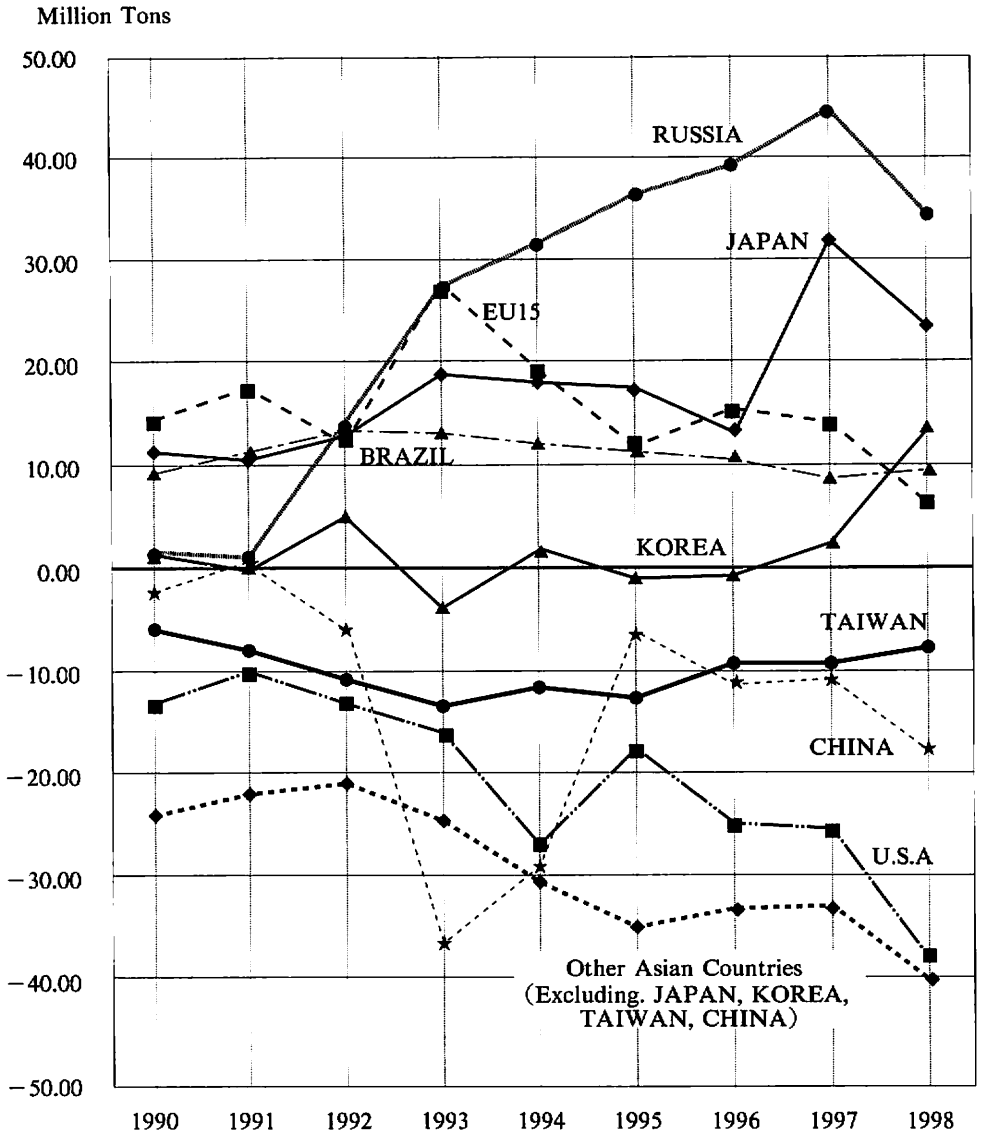
(1) Production, Apparent Steel Consumption and Imports

In 1981, the United States' crude steel production amounted to 121 million net tons, but by 1982 this figure had dropped sharply to 74.6 million tons.

In 1982, apparent steel consumption was 76.4 million tons, a decrease from 115 million tons in 1981. The operating capacity rate hit a historically low figure of 48 percent in 1982.

Throughout the 1980s, crude steel production, steel shipments, and apparent steel consumption all remained stagnant, and the operating capacity rates hovered at

Figure 1 World Crude Steel Suppy-Demand Balance



Source: IISI
Note: Balance=Crude Steel Production—Apparent Crude Steel Consumption

relatively low levels, between 50% and 80%.

After 1994, however, crude steel production and apparent steel consumption rebounded up to 100 million tons, and the operating rate improved to 93%, reflecting drastic cutbacks in obsolete capacity carried out during the 1980s. However, the operating rate declined again to under 90% in 1998, reflecting an expansion of raw steel capacity and a surge of imports.

Domestic capacity has increased in the past few years with the establishment of new minimills and also from additional capacity created within established integrated steel companies.

Until the 1960s, the U.S. imported very little steel. But finished steel imports hit 22% of apparent steel consumption in the recession year of 1982, and through the 1980s maintained an above-20% level. In 1998, finished steel imports soared to a record level of 41.5 million tons, capturing over 30% of apparent steel consumption.

Table 2 Production, Shipments, Imports, Exports and Apparent Consumption

(Unit: 1,000 Net Tons, %)

Y	Raw Steel Production		Domestic Shipment	Imports				Exports	Apparent Consumption
		% of Capacity	(A)	Total Imports (B)	Semi-Finished Imports (C)	(B/E)	(C/B)	(D)	(E)
1980	111,835	72.8	83,853	15,495	155	16.3	1.0	4,101	95,247
1981	120,828	78.3	88,450	19,898	790	18.9	4.0	2,904	105,444
1982	74,577	48.4	61,567	16,663	717	21.8	4.3	1,842	76,388
1983	84,615	56.2	67,584	17,070	822	20.5	4.8	1,199	83,455
1984	92,528	68.4	73,740	26,163	1,516	26.4	5.8	980	98,922
1985	88,259	66.1	73,043	24,256	2,440	25.2	10.1	932	96,367
1986	81,606	63.8	70,263	20,692	2,084	23.0	10.1	929	90,026
1987	89,151	79.5	76,654	20,414	2,283	21.3	11.2	1,129	95,940
1988	99,924	89.2	83,840	20,891	2,845	20.3	13.6	2,069	102,663
1989	97,943	84.5	84,100	17,321	2,198	17.9	12.7	4,578	96,843
1990	98,960	84.7	84,981	17,169	2,363	17.5	13.8	4,303	97,847
1991	87,896	74.7	78,846	15,845	2,258	17.9	14.3	6,346	88,345
1992	92,949	82.2	82,241	17,075	2,394	18.0	14.0	4,288	95,028
1993	97,877	89.1	89,022	19,501	4,993	18.7	25.6	3,968	104,554
1994	100,579	93.0	95,084	30,066	7,937	24.8	26.4	3,826	121,325
1995	104,930	93.3	97,494	24,409	5,203	21.4	21.3	7,080	114,822
1996	105,309	90.7	100,878	29,164	7,530	23.3	25.8	5,031	125,011
1997	108,561	89.4	105,858	31,157	6,358	23.8	20.4	6,036	130,979
1998	108,752	86.8	102,420	41,520	6,776	30.0	16.3	5,520	138,420

Source: AISI

(2) Steel Shipments by Market Classification and Product Grades

Steel consumption has grown very slowly in the United States since the late 1960s, as the automotive market matured and cars began to be downsized in response to the higher energy prices of the 1970s. It peaked at 110 million tons in 1973-74, during the period of soaring materials prices, and failed to increase for the following two decades. During the 1986-90 business expansion, for example, American steel consumption averaged just 96.5 million tons. Only recently, in the strong economy of the mid-1990s, did steel consumption surpass the peak level of 1973-74, rising to more than 120 million tons. In 1998, apparent steel consumption reached 138 million tons.

The automotive industry was the largest single consumer of steel, using nearly 20% of total output. Today, the automotive and construction sectors each amount for about 15% of shipments, with the remainder spread across various markets including machinery, rail equipment, appliances and energy. The biggest sector is steel service centers (AISI [1998] Table 20A).

With regard to the product form of steel shipments, flat rolled products account for approximately 60% of steel demand in the U.S., while the share of galvanized sheets for the automotive and construction sectors has increased since 1993 (AISI [1998] Table 10). As a result of a shift in production by domestic mills from hot-

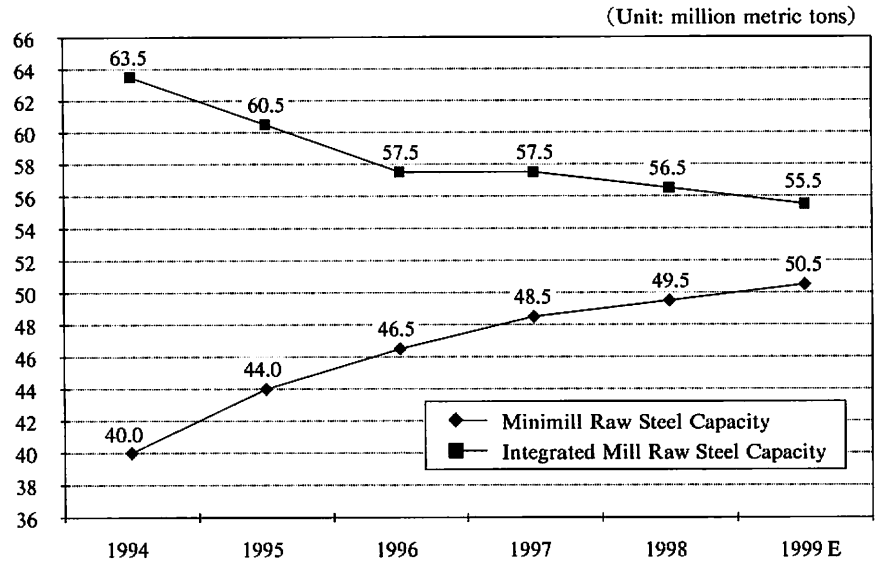
rolled sheets to downstream products such as cold-rolled sheets/galvanized sheets, a shortage of hot-rolled coils and semi-finished products has led to an increase in foreign imports.

(3) Integrated Mills vs. Minimills

In the 1980s, crude steel produced by minimill electric arc furnaces (EAF) accounted for approximately 30% of total crude steel production. In the 1990s, this share increased to over 40%, and to 50% in 1999, while the share held by the large integrated steel mills fell drastically.

Most of the innovations in melting technologies over the past two decades have taken place in the area of EAF. Through the use of thin slab casting, minimills are increasing their ability to compete directly with the integrated producers of flat-rolled products. Domestic competition from the minimills has weakened American integrated mills (Figure 2).

Figure 2 Raw Steel Capacity: Minimills vs. Integrated Mills



Source: Presentation of Dr. Donald F. Barnett, President, Economic Associates Inc. USA, Steel Survival Strategies XIV, June 22-23, 1999.

3. Performance of American Steel Companies

(1) Income Data

(a) Net sales

According to the American Iron and Steel Institute (AISI), financial data for 1980, 1982, 1991, 1995, 1997, and 1998, which covered companies making up over 65% of the reported total raw steel production of the entire industry, net sales were $37.1 billion in 1980, $28.2 billion in 1982, $26.8 billion in 1991, $34.9 billion in 1995, $36.4 billion in 1997 and $35.6 billion in 1998.

(b) Net Losses

American steel producers suffered net losses to the tune of $3.4 billion in 1982,

$2 billion in 1991 and $4.1 billion in 1992.

(2) Cost Reductions

(a) Steel Employment:[1] According to the AISI, the average number of employees decreased by one fourth between 1980 and 1998, from 398,000 to 110,000.

(b) Employment Costs: Employment costs per net sales decreased from 37.2% in 1980 to 20.9% in 1998.

(c) Value added: While total employment cost per hour increased two-fold, net sales per person increased three times between 1980 and 1998.

(3) Capital Expenditures

(a) In 1980, crude steel production capacity was 157.3 million tons. By 1994, this had been reduced to 108.2 million tons. Due to new additions, the crude steel capacity in 1998 was 125.3 million tons (AISI [1998] Table 1B).

(b) Capital Expenditures: During the 1980s, capital expenditures on plants and equipment remained at the level of about 2 billion dollars. After 1994, capital expenditures began to recover, hitting $2.7 billion in 1998. More than $50 billion have been invested in new plants since 1980 (AISI, [1999]).

(c) Sources of Capital Expenditures: Basically, the U.S. industry traditionally depended on self-financing, mainly through depreciation allowances and retained earnings. In the 1990s, sales of assets, long-term debts, and equity financing have been widely utilized. By 1998, American steel industry companies had $7.3 billion in long-term debt.

Table 3 Selected Financial Indicators

	1980	1982	1987	1991	1993	1995	1996	1997	1998
①Average No. of Employees (1000)	398	289	175	164	140	123	119	112	110
②Net Sales (Million $)	37,163	28,239	26,933	26,871	29,416	34,884	34,702	36,367	35,624
③Employment Costs (〃)	13,826	12,199	7,762	8,379	8,540	9,089	8,427	7,782	7,461
④Interest&OtherFinancialCosts (〃)	499	600	539	593	569	574	530	663	654
⑤Net Income (〃)	681	−3,384	1,077	−2,042	1,870	1,534	442	1,031	960
④/② (%)	1.3	2.5	2.0	2.2	2.5	1.6	1.5	1.8	1.8
③/② (%)	37.2	31.2	28.8	31.2	29.2	26.0	25.6	21.3	20.9
⑤/② (%)	1.8	−12.0	4.0	−7.6	6.4	4.4	1.3	2.8	2.7
②/① (1000S)	93	136	165	184	234	284	293	325	324
③/① (1000S)	35	42	48	57	68	74	75	70	68
Capital Investments (Steel Div.)	2,651	2,258	1,164	2,325	1,511	2,462	2,339	2,663	2,725
Depreciation (〃) (Million $)	1,547	1,481	1,295	1,286	1,545	1,635	1,664	1,695	1,754
Stockholders Equity Ratio (%)	47.0	40.4	13.9	11.4	12.8	25.8	27.3	25.8	27.1
Long-Term Total Liabilities (Million $)	8,582	10.515	12,369	17,518	19,848	18,546	18,501	20,181	21,023
Long-Term Debts (〃)	6,822	7,818	5,388	5,871	6,228	5,651	6,382	6,908	7,313
All Other Long-Term Liabilities & Reserves (〃)	1,760	2,697	6,981	11,647	13,620	12,895	11,900	13,273	13,710

Source: AISI, *Annual Statistical Reports*

II. Steel at the Crossroads: The Decline of the American Steel Industry

1. Steel at the Crossroads

In 1980, the AISI released "Steel at the Crossroads: The American Steel Industry

in the 1980s." The paper emphasized the crisis in the American steel industry, and asked the government for direct assistance and to take the following measures to help it overcome the crisis: (a) the strict application of U.S. trade laws; (b) a shortening of the depreciation period; (c) the relaxation of environmental regulation, and others (AISI, [1980]).

In September 1980, under the Carter administration, a tripartite committee composed of the representative from government, companies and unions began to jointly study the overall aspect of the steel crisis. Following this, the Carter administration announced a revision of Trigger Price Mechanism.

Issues involving the steel industry crisis featured prominently in the 1980 presidential election campaign. The Reagan administration adopted the measures recommended by the tripartite committee, and enacted: (a) the shortening of the depreciation period; and (b) the relaxation of environmental regulations.

At the end of 1981, Mclouth Steel filed for Chapter 11 bankruptcy protection, and Kaiser Steel announced the closure of its blast furnace and crude steel production facilities in California. With this began the great steel depression of 1982. Barnett [1993] defined the 1980s as a period of upheaval for the American steel industry.

2. Upheavals in the American Steel Industry

The oligopolistic structure of the American steel industry, which was composed of U.S. Steel and other integrated steel mills, faced a crossroads in the 1980s (Adams, [1990]; Barnett, [1993]; Scherer, [1996]).

U.S. macroeconomic policies including the maintenance of high interest rates to hold down inflation, the appreciation of the U.S. dollar, taxation on capital investment, anti-trust actions, and environmental and safety regulations, greatly affected the country's steel industry.

The stagnation and maturing of American manufacturing industry, as represented by the automobile and construction sectors, and the decline of steel consumption per unit brought about by technological improvements, caused a decline in demand for steel.

Up to the 1980s, the integrated steel mills had enjoyed the huge domestic steel markets isolated from global competition, maintaining high cost-price-profit mechanisms, while keeping a hostile relationship with the United Steelworkers of America, or USWA.

However, they were not able to maintain the administered prices and their established market shares, due to increasing price competition from imports, emerging minimills and steel substitute materials.

3. The Vicious Circle of the American Steel Industry

After the collapse of administered price mechanisms, the integrated mills suffered a profit squeeze from price competition and fluctuations. The after-tax rate of return on equities for the integrated steel firms lagged far behind the U.S. manufacturing sector average.

With the profit crisis intensifying, it became increasingly difficult for the firms to even maintain existing plants and equipment in good working order. Since the

depreciation allowance did not keep pace with actual replacement costs, existing plants and equipment could not be upgraded to the highest standards. On the other hand, long-term debts began to rise dramatically, making the possibility of long-term commitments to new innovations even more remote.

In other words, the U.S. steel industry was unable to keep up with investment requirements. Piecemeal modernization and mismatched capital investments failed to keep abreast of new technological innovations (there were delays in the introduction of LD converters and continuous casting) and with the imbalances of facilities in steel production lines, returns on investments deteriorated along with the growing obsolescence of facilities. The American steel industry suffered from a deterioration in quality and cost competitiveness.

Given this situation, it was inevitable that foreign competitive steel mill products would enter the market from Europe, Japan, and the emerging countries. Facing a flood of imports and a massive shutdown of the obsolete facilities, the integrated mills secured the support of organized labor (the USWA), reversing the long-standing hostility of the past, to meet the challenge of imports. The integrated mills lobbied Congress along with the USWA, asking for direct assistance.

In addition, the integrated steel mills began to diversity into non-steel sectors in search of better profits. Thus, the hollowing of the American steel industry continued.

III. American Steel Survival Strategies

1. Obsolete Plant Closure and Reintegration

During the 1980s, the number of integrated steel mills fell dramatically, from 50 to 23, through the means of shutdowns of obsolete plant and facilities (Hogan [1994]).

The American steel industry took the following measures as survival strategies:

(a) The shutdown of obsolete small blast-furnaces and coke ovens;
(b) A drastic reduction in crude steel capacity, and the new development of electric arc furnaces (EAF);
(c) New construction of continuous casting facilities;
(d) The reduction of obsolete plates as well as hot-rolled and cold-rolled steel mills;
(e) The new construction of galvanized steel sheet mills for the automotive and construction sectors;
(f) Withdrawals from unprofitable bar and section products;
(g) The emergence of minimills, especially in the production of steel structures and flat-rolled products, utilizing new steel technology innovations such as thin-slab casters.

In the 1990s, the integrated steel mills concentrated mainly on the production of flat-rolled steel products (focusing on major demand markets for steel, such as the automotive and construction industries,) at two or three major integrated steel plants, in a bid to enhance productivity and cost competitiveness.

2. Reorganization of the Integrated Steel Companies

The plant closures and reintegration of steel mills were the internal survival strategies taken by the integrated steel mills. Through 1980s, the integrated companies restructured through: (1) bankruptcy reorganizations; (2) spinoffs from former owners; and (3) de-integrations (Hall, [1997] 211).

(1) Bankruptcy Reorganization

LTV filed for protection under Chapter 11 of the U.S. bankruptcy code in 1986, and was reorganized in 1992 through special measures taken under Chapter 11, including a shift in the pension burden to the Pension Benefit Guarantee Corporation (PBGC), accompanied by drastic plant closures and a reorganization.

McLouth Steel (1981-96) and Wheeling-Pittsburgh (1985-89) were also reorganized under Chapter 11.

(2) The Divestiture of Integrated Mills by Owners

(a) Weirton Steel: Once a division of National Steel, it was sold to an ESOP (Employee Stock Option Plan) in 1984.
(b) California Steel was sold by Kaiser Steel in 1984.
(c) Geneva Steel was closed down and then sold by U.S. Steel, in 1986-87.
(d) Gulf States Steel (1987) and Warren Consolidated (1988) were sold by LTV Steel.
(e) Rouge Steel was sold by Ford in 1989.
(f) USS-POSCO Industries was jointly established by the Korean firm POSCO and U.S. Steel in 1985, following a spinoff of the Pittsburg works of U.S. Steel.
(g) USS-Kobe Steel was also jointly established by Kobe Steel and U.S. Steel, after the spinoff of U.S. Steel's Lorraine Works. In 1999, Kobe Steel sold its holdings in the U.S.-Kobe joint ventures.

(3) The "De-Integration" of Companies

(a) CF&I closed its open hearth mills in 1982, and filed for Chapter 11 in 1990. Oregon Steel, a minimill, purchased CF&I in 1993.
(b) Phoenix Steel closed its crude steel mills in 1983 and then reorganized itself as Citisteel, a minimill. It was then purchased by the Chinese firm CITI in 1988.
(c) Sharon Steel closed its crude steel mills and electric furnaces in 1989 and 1992, respectively, and reopened in 1995 as Caparo, a minimill, with plans to install a new thin-slab caster for flat-rolled products.

By 1987, these reconstituted mills from traditional integrated steel mills held approximately 30% of the market share of steel products shipments (Marcus, [1987]).

3. Diversification into Non-steel Sectors

(1) Diversification up to 1980

As seen in the case of U.S. Steel corporation, the development of the American

steel industry was finally established by the full vertical-horizontal integration of steel production, from upstream areas such as captive iron-ore and coking coal mines, transportation of raw materials, and full-set production facilities covering all grades of steel mill products, to downstream areas such as steel processing, fabrication and service centers and transportation of the finished steel mill products to customers.

However, reflecting the declining trend of the profitability of steel, the integrated steel companies diversified into non-steel sectors where the average rate of return on equity was higher, and which were free from organized labor.

Those diversified sectors included: (a) raw materials, such as titanium, aluminum and plastics; (b) petrochemicals, crude oil and gas; (c) engineering; (d) financial services; (e) residential construction; (f) real estate, development, recreation and leisure; (g) aerospace; and (h) the defense sector.

This diversification occasionally contributed to a propping up of the integrated steel companies' revenues during the steel depression. But they sold their stakes in most of these sectors during the 1980-90s, as part of their survival strategies.

(2) Reorganization and Diversification Since the 1980s

(a) The reorganization of U.S. Steel as USX

U.S. Steel acquired Marathon Oil in 1982, and Texas Gas in 1986. It then, in a surprising move, announced a new corporate name, USX. Today, 70% of the total revenues of USX are from its non-steel energy group, USX-Marathon.

(b) ARMCO and National Intergroup (AVATEX)

Armco Steel changed its corporate name to ARMCO Inc. in 1978, and merged with Kawasaki Steel in 1989, spinning off its carbon steel division. In 1999, AK Steel merged with ARMCO Inc.

In 1983, National Steel incorporated a holding company called National Intergroup, and later changed the company name to AVATEX, diversifying into non-steel business.

(c) Disposal of unprofitable sectors

Bethlehem Steel decided to withdraw from unprofitable steel section production, and in 1997 closed Bethlehem Structural Products Corp. At the same time, Beth Ship was closed down, and Beth Forge and Beth Centec Roll Corp. were sold.

LTV, after emerging from Chapter 11 in 1993, sold Continental EMSCO, an energy related company.

(d) Back to the core business — steel

In 1995, LTV, National Steel, and AK Steel were 100% concentrated in the steel business. Bethlehem was also 98% dependent on the steel business. The only exception was USX, which was roughly 30% dependent on steel (Marcus, [1997] and company annual reports).

4. Global Realignment in the American Steel Industry — Foreign Ownership and International Joint Ventures

The persistent and growing crisis in the industry in the early 1980s pushed the U.S. industry to form joint ventures with international competitors in order to secure foreign capital and technologies.[2] By contrast to steel trade issues, there were no specific restrictions on foreign direct investment into the U.S.

In the 1980s, the American financial institutions were hesitant to provide support for the financial difficulties of the domestic steel companies. The companies, who were thus unable to secure the investment capital required for modernization, came to rely on Japanese, Korean and even Brazilian firms.

Japanese steel companies invested energetically into the major American steel firms, establishing new joint ventures to supply mainly high-quality, value-added automotive steel sheets for Japanese automotive companies which had been established in the U.S. in order to avoid trade friction. Japanese steel management systems, in areas such as production and process control, preventive facilities maintenance and industrial relations systems, were energetically introduced into the joint ventures, and contributed greatly to improving productivity.

Financially, major Japanese financial institutions offered syndicate loans to the American steel companies, corresponding to Japanese steel makers' investments in the U.S.

Furthermore, Japanese trading firms offered lease loans for the introduction of new facilities by those joint ventures.

(1) Foreign Players among the U.S. Minimills

Under the established oligopolistic structure of the American steel industry, there were high barriers to entry, so that the only new firms established up until 1980 were local minimills. There were European and Canadian investments into American minimills up to 1980, but after that year, Japanese minimills and trading firms began to invest into American local minimills such as Auburn, Florida (Ameri Steel), Tamco and Nucor-Yamato.

(2) Direct Investment into the Integrated Steel Companies

There is considerable foreign ownership of major steel companies, as well as joint ventures in the U.S., as shown in Table 4. With the exception of Bethlehem Steel, all the major U.S. integrated steel companies are held by Japanese steel firms. In 1998, the British-based LNM/Ispat acquired Inland Steel, and Inland Steel was transformed into Ispat-Inland Steel.

(3) Global Joint Ventures

Since 1990, British, Dutch, Canadian and Australian integrated steel mills have entered into the American flat-rolled product market by constructing new thin slab casting facilities with electric arc furnaces and new galvanizing facilities.

There are also joint ventures between foreign integrated mills and American integrated mills and/or minimills. The following are examples:

DNN: Canadian Dofasco/National Steel/NKK, 1993
Gallatin Steel: Canadian Dofasco and Co-Steel, 1995
North Star BHP: Australian BHP and North Star, 1996
Trico Steel: British Steel Corp/LTV Steel/Sumitomo Metals, 1997
Galv. Pro: Dutch Hoogovens Staal B.V. and Weirton Steel, 1997

(4) The Globalization of the American Steel Industry

Foreign direct investment by the American steel industry began in the late 1990s. USX and VSZ a.s., formed a 50-50 joint venture in Slovakia in 1998, called VSZ U.S.

Table 4 Major Joint Ventures in the U.S. Between Japanese and U.S. Steelmakers

	Name of local corporation (year of establishment)	Stockholders (share; %)	Contents of facilities	Primary products (1,000 metric tons/year)	Year when production began under plan
Integrated production	National Steel (1984 takeover)	NKK (68)	Integrated steel-making factory	Hot and cold-rolled sheets, surface-treated steel sheets and tin plates (total 4,500)	1984 (capital participation)
	AK Steel (formerly Armco Steel) (1989)	Kawasaki Steel* (9) Armco (4) Others (87) (general shareholders)	Integrated steel-making factory	Hot and cold-rolled sheets, surface-treated steel sheets (total 4,350)	In operation (a joint venture set up by spinning off the ordinary steel divsion of Armco)
	USS/Kobe Steel (1989)	Kobe Steel** (50) USX (50)	Integrated steel-making factory	Bar steel, steel tubes (total 2,180)	In operation (a plant of USX taken over)
Steel sheet manufacture (including automobile manufacturing use)	I/N Tek (1987)	Nippon Steel (40) Ispat-Inland (60)	Cold strip mill annealing facility	Cold-rolled steel sheets (910)	1990
	I/N Kote (1989)	Nippon Steel (50) Ispat-Inland (50)	Galvanizing facilities	Hot dipped galvanized steel sheets (450) Electro-galvanized steel sheets (360)	1991
	California Steel Industries (1984 takeover)	Kawasaki Steel (50) CVRD; Brazil (50) (Companhia vale do Rio Doce)	Cold and hot strip mills Galvanizing facilities	Hot and cold-rolled sheets, galvanized steel sheets, steel tubes (total 1,630)	1984
	L-S Electro-Galvanizing (1985)	Sumitomo Metal Industries (40) LTV (60)	Galvanizing facilities Coating facility	Electro-galvanized steel sheets (360)	1986
	L-S II Electro-Galvanizing ***(1989) (1999)	Sumitomo Metal Industries/Bethlehem (50) LTV (50)	Galvanizing facilities Coating facilities	Electro-galvanized steel sheets (360)	1991
	Wheeling-Nisshin Inc. (1984)	Nisshin Steel (64) Wheeling-Pittsburgh Steel (36)	Galvanizing facilities	Aluminized and galvanized steel sheets (240) Galvanized steel sheets (220)	1988 1993
	PRO-TEC Coating (1990)	Kobe Steel (50) USX (50)	Galvanizing facilities	Hot dipped galvanized steel sheets (540)	1993
Electric-furnace steel-making	Nucor-Yamato Steel (1987)	Yamato Kogyo (49) Nucor Steel (51)	Electric-furnace steel-making facility	Steel shapes (540)	1988
	Trico Steel (1994)	Sumitomo Metal Industries (25) LTV (50) British Steel (25)	Electric-furnace steel-making facility	Hot-rolled steel sheets (2,000)	1997
	Ameri Steel/ Florida Steel (1992 takeover)	Kyoei Steel ****(12)	Electric-furnace steel-making facility	Bar steel (1,100)	

Notes: * Kawasaki reduced its holding of AK Steel shares to 9 percent in August 1999.
** Kobe sold its holding of 50 percent of the shares of Lorraine Tube Co. to USX in December 1999.
*** Sumitomo sold 50 percent of its share holdings to Bethlehem Steel in 1999.
**** Kyoei sold 88 percent of its shares of Ameri Steel in August 1999.

Steel, for the production and marketing of tin mill products to serve the emerging Central European market. AK Steel reached an agreement with the Mexican firm Hylsamex for sales promotion to Middle and South American markets in 1998. Nucor made an investment in Trinidad & Tobago to construct an iron sponge plant to power electric furnaces using scrap alternate resources, but the results were unsatisfactory. In addition, Nucor is planning to establish a joint venture with CSN in Brazil to manufacture flat-rolled products.

5. Steel Trade Protectionism

Over the past three decades, the U.S. steel industry has consistently used trade protectionism as a means to avoid the pressures of foreign competition. As their core survival strategy, the major American integrated steel companies, with the recent support of emerging minimills, have been intensifying their pleas for protection to the steel caucus formed by U.S. senators and representatives, and to the government to enforce U.S. trade law as a means to restrain the surge in steel imports. The once hostile USWA has joined and supported steel trade protectionism.

Beginning with the 1969 voluntary restraints, followed by the trigger price mechanism, and the first and second VRAs, the U.S. Steel industry has been protected and isolated from international competition.

Table 5 Three Decades of U.S. Steel Trade Protection

'69 '70 '71 '72 '73 '74	'75 '76 '77	'78 '79 '80 '81 '82	'83 '84	'85 '86 '87 '88 '89	'90 '91 '92	'92 '93	'94 '95 '96' 97	'98 '99
Voluntary Restraint Period	Trade Cases	Trigger Price Mechanism Period	Trade Cases	First VRA Period	Second VRA Period MSA Negotiation	Trade Cases	Massive Increases in U.S. Demand and Steel-making Capacity (Minis Only)	New Trade Cases

(1) Voluntary Export Restraints (VERs) (1969-74)

(a) The first voluntary export restraints (1969-71) on steel exports to the U.S. were implemented by the EC and Japan under the Johnson administration. They limited exports from these countries to the U.S. to a specified share of U.S. consumption.

(b) The second voluntary restraints (1972-74)

The EC's steel exports to the U.S. eventually exceeded the quota, and import penetration from third countries increased. The consumer union called the VER a violation of U.S. anti-trust law.

(c) "Buy American" policy: in 1975, the U.S. steel industry started a full-scale "Buy American" publicity campaign.

(2) The Trigger Price Mechanism (1978-82)

In 1977, the Carter administration, under pressure from the steel caucus, released the Solomon Report which recommended a trigger price mechanism (TPM).[3]

(a) The First TPM (1978-80)

In 1978, the TPM, or minimum import prices, was established in major U.S.

regions, based on Japanese steel production costs, which were deemed as the most efficient in the world at that time. Under the TPM, steel import prices were automatically checked. In 1980, the TPM was discontinued immediately after U.S. Steel took action against European firms, charging them with dumping steel mill products.

(b) The Second TPM (1980-82)

During this period, Trigger Prices were revised to reflect U.S. dollar fluctuations against Japanese yen. The U.S. integrated mills enjoyed rising domestic prices. But simultaneously, steel imports from the emerging countries increased. In October 1982, the TPM were terminated as U.S. Steel filed a petition against the EC on charges of dumping and countervailing duties.

(3) The First Voluntary Restraints Arrangement (VRA 1984-89)

In 1984, the Reagan administration rejected complaints by the U.S. steel industry under Section 201, and instructed the USTR to negotiate voluntary restraints with each of the countries involved in the dispute. The program included the following: within 5 years, the total import penetration rate would be limited to 18.5% of total steel shipments, and within this total quota, a VRA would be established by countries and steel mill product categories. In October 1984, the Steel Import Stabilization Act was approved, and the VRA became in effect.

With the shift from direct price controls (TPM) to quantity controls by countries and product categories, the controls came to cover 80% of total steel imports, and the number of regulated countries expanded to emerging countries, in addition to the EC and Japan. But the quantity control essential to VRA failed to work smoothly because of difficulties in forecasting future total domestic steel demand, and particularly by specific product categories, reflecting market fluctuations.

(4) The Second VRA (1989-92) and MSA Negotiation

Based on Steel Trade Liberalization Program enacted in November 1989, the Bush administration approved the extension of VRA for up to two and a half years, and instructed the USTR to reach a multilateral steel agreement (MSA) in order to restrict unfair international steel trade practices such as dumping, government subsidies, cartels and non-tariff barriers to steel trade.

Under the extended VRA, steel import to the U.S. fell drastically, reflecting stagnant U.S. market conditions. Most countries failed to meet their quotas by 30-40% (Moore, [1996], 115).

The MSA negotiations started in October 1990. However, no agreements on government subsidies were reached between the EC and U.S.A., and no anti-dumping regulations were attained between the EC, Japan, Korea and the U.S. Moreover, Russia and China were not involved.

Finally, the USTR confirmed the termination of the VRA system, which came to an end in March 1992.

(5) Endless Trade Cases (1992-97)

In June 1992, twelve U.S. mills filed anti-dumping (AD) and/or countervailing duty (CVD) petitions concerning steel plates and sheets, against Japan and 21 other countries.

Orders were issued imposing AD and CVD penalties on imports of cold-rolled steel coils from three countries, and coated steel coils from six countries. In 1994, the International Trade Commission (ITC) announced the final dumping determination on the steel plates and sheets from several countries. Japanese silicon sheet steel, OCTG, and stainless wire rods were targeted for AD petitions.

After 1994, the EITs (Economies in Transition) such as Russia and Ukraine, along with China and South Africa, drastically increased their exports to the U.S. steel market.

In October 1996, a group of minimills filed trade petitions concerning steel plates and sheets against Russia, China, Ukraine and South Africa. In December 1997, the ITC announced the final dumping determination.

IV. The Amazing Transformation of the American Steel Industry

1. The Melting of the Steel Oligopolistic Structure

As recently as 1970, there were 15 integrated steel companies, led by U.S. Steel, which dominated the U.S. steel market. This number fell dramatically in the years since then. In 1991, only five integrated steel companies remained, holding just 34% of total steel shipments. Moreover, they had been transformed into foreign owned firms of joint ventures.

U.S. Steel, which still remains the largest of the integrated steel company, held only 10.3% of domestic steel shipments in 1998, followed by Bethlehem, National, Ispat-Inland, and AK Steel.

The reorganized integrated steel mills which have been under Chapter 11 bankruptcy protection include LTV, Sharon Steel, Wheeling-Pittsburgh and CF&I. The remaining integrated firms are the results of corporate spinoffs or divestitures from the older integrated steel companies such as Rouge Steel, Weirton Steel and Acme Steel. In 1991, the reorganized integrated steel mills held 25% of total steel shipments (Table 6).

We have observed a melting down of the integrated steel companies, or the end of the era of "Big Steel" (Hall, [1998] 65-104). While in 1979 the minimills held

Table 6 The Transformation of the American Steel Industry

Type	1979			1991		
	Number of Firms	Shipments	Share (%)	Number of Firms	Shipments	Share (%)
Major integrated mills	8	73.4 (73)	64	5	30.3 (38)	34
Reconstituted mills	0	0 (0)	0	15	22.4 (28)	25
Other traditional mills	20	17.7 (17)	15	6	3.5 (4)	4
Minimills	48	8.2 (8)	7	52	21.3 (27)	24
Specialty steel mills	10	1.0 (1)	1	9	1.5 (2)	2
Domestic total		100.3 (100)	87		79 (100)	89
Imports		17.5	15		15.7	18
Exports		2.8	2		6.5	7
Total market		115	100		88.2	100

Shipments in million tons.
Source: World Steel Dynamics [1992].

only an 8% share of the total market, their share increased to 27% in 1991, and now has reached 34%. They have been expanding their business to the production of flat-rolled products, an area once monopolized by the integrated mills, from traditional long products. We can thus observe "big minis" and "mini-grated" mills.

2. The New Development of the Minimills

(1) The Rise of the Minimills

Since 1960s, the minimills primary use steel scrap in electric are furnaces and generally produce a narrow range of steel products — the long products such as bars, shapes, rods and sections. The minimills enjoy certain competitive advantages than the integrated steel mills such as (a) lower capital expenditures for construction of facilities, (b) non-unionized work forces with lower employment costs, more flexible work rules and cooperative industrial relations, (c) a leaner production system, and (d) lower environmental and other overhead costs. The minimills were competitive with cheap imported steel products.

(2) The New Development of the Minimills

A significant increase in modern minimill capacity is underway today. In 1997, Nucor led the minimills in production, producing approximately 9.7 million tons, followed by U.S. Steel (Iverson, [1997]). In 2000, it is projected that Nucor will ship 11.4 million tons of steel, surpassing U.S. Steel's 11.25 million tons.

At the initial level, most minimills were producing between 100,000 and 1 million tons. These minimills included North Star, with 7 plants, Birmingham ,with 5 plants, Florida (Ameri Steel), with 5 plants, and Chapparral, with one large plant in Texas.

In 1989, Nucor introduced the compact strip production system (CSP) at its Crawfordville, Hickman and Berkeley works. This system was based on electric arc furnaces, utilizing thin-slab casting technology to produce some flat-rolled products.

Since 1990, emerging minimills such as Steel Dynamics (Indiana), as well as international minimill joint ventures such as Trico (Alabama), Gallatin Steel (Kentucky), North Star/BHP (Ohio), with production capacities between 1.2 and 2.5 million tons, aggressively constructed new thin-slab casting mills in "greenfields."

There are also "brownfields" flat-rolled minimills, such as Acme Metals (Illinois), Beta Steel (Indiana), Caparo Steel (Pennsylvania), Lukens (Pennsylvania), Oregon Steel (Oregon), and Tuscaloosa Steel (Alabama).

In 1997, these flat-rolled minimills were shipping some 18 million tons of sheet steel, representing one third of the U.S. market for those products. By 2000, the flat products capacity of the minimills will reach 22 million tons, or 40% of flat-rolled products (U.S. Department of Commerce, [1999]).

The development and diffusion of the thin slab caster has been a major factor behind the reorganization of the American steel industry, as it has reduced barriers to entry.

Today, the minimills are acting like "integrated minimills" in the areas of facilities development, anti-dumping litigation,[4] and the "Steel Alliance" campaign.[5]

Table 7 Supplier Group Market Shares Hot Roll Sheet & Strip, 1992 & 1997

MT	1992	1997
Integrated	73%	48%
Minimill	9%	29%
Imports	18%	24%

Source: AISI & Estimates

3. The Renewal of the Integrated Steel Companies

Today, the integrated steel companies have become much more efficient than they were just a decade ago. Within firms, the elimination of bureaucratic and authoritative multi-layer management system, and the introduction of lean management systems supported by information networks has contributed to cuts in overhead costs.

Intra-firm relationships have changed through the full-fledged utilization of information technology (IT). Outsourcing, joint ventures, and network business have contributed to drastic cost reductions. Major changes in union work rules, and a shift to the contracting out of many routine maintenance functions to smaller independent firms, have helped to reduce labor use. Cooperative industrial relationships have become common among the major integrated steel companies.

(1) Refocusing on Steel

The renewed integrated steel firms are now concentrating their efforts on steel production, mostly in the form of value-added flat rolled products destined for the automobile and construction sectors, produced at key integrated mills and new joint venture works. Bethlehem's vision is to become the "premier steel company." The following are major developments involving the renewed integrated steel firms.

(a) Product concentration on the automotive sector
By 1998, 60% of AK Steel's total production was destined to the automotive sector. The similar figure for the surface treated sheet production of National Steel will reach 60% in 2001.

(b) Withdrawal from long products
Bethlehem Steel closed Bethlehem structural products corporation in 1997.

(c) Intensive production of flat-rolled sheets at key integrated mills, accompanied by an expansion of related new facilities, such as cold mills, continuous galvanizing lines, and others. A shortage of hot-rolled sheets and slabs is forecasted.

The key integrated mills are U.S. Steel (Gary, Mon Valley, Fairfield), Bethlehem (Burns Harbor, Sparrows Point), LTV (Cleveland, Indiana Harbor), National (Great Lakes/Midwest, Granite City), Ispat-Inland (Indiana Harbor), AK Steel (Middletown/Ashland, Rockport).

(2) Improving Performance

The improving performance of the integrated steel firms is shown in Table 8.

Bethlehem's stated objectives are (a) to increase stockholder value, (b) improve customer satisfaction, (c) foster partnership among employees, and (d) be a good corporate citizen (promoting safety, personal responsibility, and continuous learning) (Bethlehem Annual Report [1998]).

Inland Steel announced in 1996 that its corporate target would be to attain a ROE of 18%. National Steel carried out an IPO in 1993, and AK Steel followed in 1994. During 1998, AK Steel repurchased common stock shares to enhance the value of the stock of its stock holders.

National Steel is emphasizing the slogan "customers first." GM, Ford, Toyota and Nissan have all given awards to firms such as Bethlehem, U.S. Steel (Gary), AK Steel, and National Steel as "No. 1 Quality Ranking," "Supplier of the Year," and "Quality Master Award."

V. A Resurgence of the American Steel Industry?

1. The Renaissance of Steel

The AISI's 1997 annual convention proclaimed the "Renaissance of Steel." The cost competitiveness of American steel companies in the U.S. market was declared to be number one, based on comparisons with major international steel companies (AISI [1997]).

By 1997, there were no more lamentations such as "Steel at the crossroads." The main theme of a seminar on survival strategies for the steel industry held in 1998 in New York was, "The Next Millennium: Steel's New Epoch" (Marcus [1997]). Ahlbranat, Freuhan and Giarratani published *The Renaissance of American Steel* [1996], and Moynihan forecasted *The Coming American Renaissance* [1996].

2. A New Crisis in 1998: Supply Shortage

The situation in the American steel market, however, changed drastically in 1998, under the influence of the booming U.S. "new economy" and the crisis in the world steel markets.

The United States' apparent steel consumption reached 138 million tons in 1998, reflecting historical records in automobile sales, construction, and other areas which increased the demand for steel. Domestic steel shipments were unable to fill the increased demand, even operating at 86.8% of the crude steel production capability of 125 million tons.

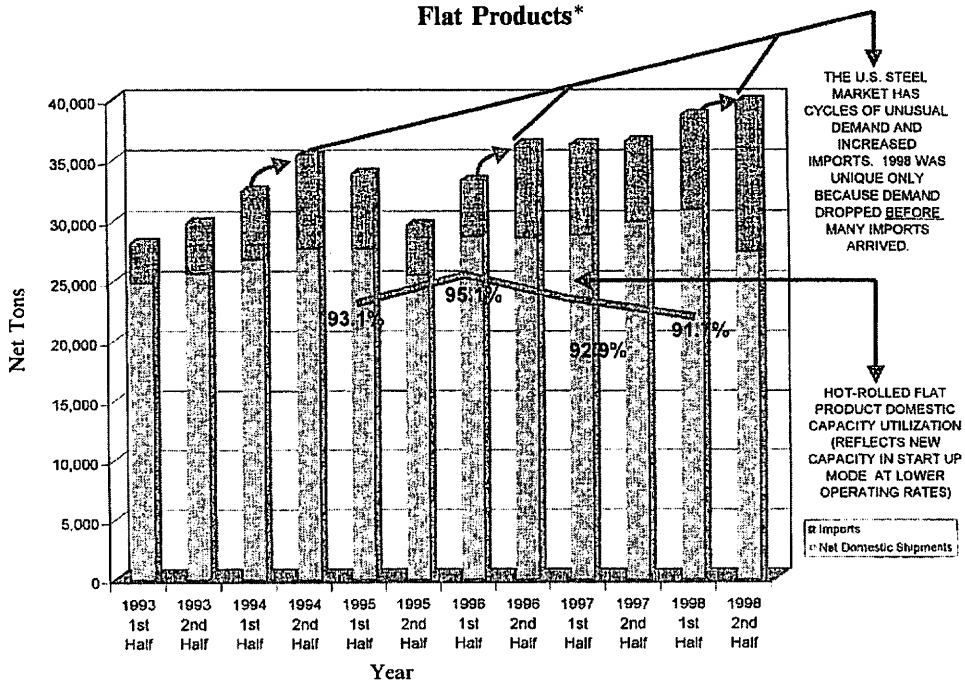
Foreign steel imports surged, under the influence of the U.S. dollar's appreciation and the collapse of steel markets in both Asia and in Russia and other nations of the CIS. In 1998, American steel imports hit 41.52 million tons, an unprecedented level, making up 30% of domestic apparent steel consumption, compared to 24% in 1997 and 23% in 1996.

Paul Wilhelm, the president of U.S. Steel, admitted "it was unique, because consumption has remained extremely strong ... it is the supply side that has screwed the whole thing up" (Financial Times, May 14, 1999). In 1998, the American steel industry faced a "supply driven crisis." With the elimination of old blast furnaces and

coke ovens, the U.S. steel industry found itself burdened with excess capacity in hot strip mills, leading to dependence on imported slabs and hot-rolled coils for new expanded cold-rolled mills to supply peak demand. Actually in 1998, semi-finished product imports amounted to 6.78 million tons, a historical record.

The U.S. steel makers complained about cheap foreign steel, but they themselves imported about 25% of the steel coming into the U.S.: 6.78 million tons of semi-finished products and about 4 million tons of finished products. This allowed them to avoid the costs of maintaining idle capacity and to maintain a high rate of utilization on their low-cost based capacity throughout the steel production cycle.

Figure 3 The Supply-Demand Gap: Filled by Imports
Apparent Consumption /Capacity Utilization
Flat Products*



*Sheets and Strip, Cut-to-Length Plate, Plate in Coils
Source: AISI; International Trade Commission

Considering that there is 20 million tons of new generation minimill capacity for flat-rolled products in the U.S., the American steel industry as a whole is unlikely to yield any significant chunk of its domestic market to imports (D'costa [1999: 181]).

Integrated mills suffered greatly from both the import surge caused by depressed world steel prices, and expanded domestic competition from the new mini-flat mills. The operating incomes of those major mills dropped in 1998, and went into the red in 1999 (Table 8).

3. The Revival of Protectionism

(1) Dumping Cases

On September 30, 1998, U.S. Steel joined 11 other producers and the USWA in

Table 8 Steel Segment Results

(Unit: $ Million, %)

Year		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
USS	Net Sales	5,877	4,600	4,752	5,422	5,918	5,301	5,311	5,574	5,012	4,464
	Net Income	437	(235)	(140)	123	241	412	166	618	331	(128)
Bethlehem Steel	Net Sales	4,520	4,107	3,858	4,219	4,706	4,777	4,581	4,631	4,478	3,915
	Net Income	(425)	(708)	(214)	(274)	166	311	(87)	374	190	(179)
LTV Steel	Net Sales	3,860	3,393	3,565	3,868	4,233	4,283	4,136	3905	3,684	3,390
	Net Income	56	(209)	(178)	(68)	201	311	173	186	(11)	(161)
National Steel	Net Sales	2,508	2,330	2,373	2,419	2,700	2,954	2,954	3,140	2,848	2,850
	Net Income	57	(131)	(13)	(218)	97	129	65	191	96	(18)
Inland Steel	Net Sales	2,209	1,895	1,901	2,175	2,488	2,513	2,397	2,468	2,385	
	Net Income	1	(313)	(201)	(28)	149	182	48	144	113	N.A
AK Steel	Net Sales	1,417	1,301	1,405	1,595	2,017	2,257	2,302	2,441	2,394	4,284
	Net Income	(74)	(219)	(499)	12	193	298	265	281	214	250
6 Integrated Mills	Net Sales	20,390	17,626	17,854	19,698	22,062	22,086	21,680	22,158	20,801	
	Net Income	52	(1,815)	(1,245)	(453)	1,047	1,643	628	1,794	933	
	%of Total Sales	93%	92%	92%	90%	88%	86%	86%	84%	82%	N.A
	%of Net Income	30%				74%	79%	62%	79%	66%	
	Sales Growth	100	86%	88%	97%	108%	108%	106%	109%	102%	
Nucor Steel	Net Sales	1,487	1,466	1,619	2,254	2,976	3,462	3,647	4,185	4,151	2,918
	Net Income	118	96	125	200	370	431	388	460	412	228
	Sales Growth	100	99%	109%	152%	200%	233%	245%	281%	279%	(1-3Q)
Total	Net Sales	21,877	19,091	19,473	21,951	25,038	25,548	25,327	26,342	24,952	
	Net Income	170	(1,719)	(1,120)	(253)	1,417	2,074	1,016	2,254	1,345	N.A
	Sales Growth	100	87%	89%	100%	114%	117%	116%	120%	114%	

Note: ( ) Deficit
Source: Annual Reports

filing trade cases against Japan, Russia, and Brazil.

The products involved ranged widely from original hot-rolled sheet and strips, cut-to-length plates from eight counties (in February 1999), cold-rolled sheet and strips from twelve countries (June 1999), pipes and tubing from five countries, structural shapes from four countries (July 1999) and tin plates (October 1999).

Russia and Brazil agreed to accept quotas on hot-rolled sheets, exempting them from dumping duties through the suspension of government agreements.

In addition, U.S. steel makers filed cases under Section 201 (the safeguards clause) of U.S. trade law, requesting restraints on wire rods and welded line pipes from all over the world except Canada and Mexico. On February 11, 2000, the Clinton Administration announced the imposition of surcharges on such products exceeding a certain quantity level.

(2) "Stand Up for Steel"

The major steel companies and the USWA jointly organized "Stand Up for Steel — Steel Up for America," a massive campaign against steel imports, and appealed this to the public.

(3) "Steel Action Program"

In January 1999, the Clinton administration submitted to the U.S. Congress its "Comprehensive Plan for Responding to the Increased Steel Imports," which urged a cut in imports into the U.S. the pre-1997 levels, or if this failed to the imposition of sanctions.

At a U.S.-Japan summit meeting held in Washington in May 1999, President Clinton urged Japan to curb its steel exports to the U.S. Japanese steel exports to the U.S. were already plunging.

On August 5, 1999, the White House announced a "Steel Action Program," including bilateral initiatives to address unfair practices supporting excess capacity, and 11 other administrative actions (The White House [1999]).

(4) Steel Quota Bills

In addition, the U.S. Congress has introduced various steel quota bills. The House of Representatives passed such a bill (The Bipartisan Steel Recovery Act) in March 1999. This piece of legislation, called the Viscdosky bill, clearly violates WTO rules. However, the Senate killed the steel quota bill in June 1999.

On the other hand, the Steel, Oil and Gas Energy Act was enacted in June 1999. It provides for $1 billion in loan guarantee packages to inefficient domestic steel mills.

(5) New Labor Contracts

On August 6, 1999, immediately after the White House announcement, the USWA announced triumphantly that U.S. Steel and Bethlehem had approved new five-year labor contracts with $2 increases in hourly wages, plus substantial improvements in pensions and other benefits. National Steel, LTV, Ispat-Inland, AK-Steel followed.

In the midst of the depressed market situation and the energetic anti-dumping campaign, the major integrated steel companies accepted hikes in wages and fringe benefits which will become cost pressure factors in the future.

(6) Japanese Cases

On June 16, 1999, Japan asked the World Trade Organization (WTO) to set up a dispute panel to rule on a U.S. dumping act established in 1916, though this action was blocked by the U.S.

On November 18, 1999, Japan filed official complaints to the WTO against U.S. anti-dumping accusations in June regarding certain hot-rolled steel products from Japan. The Japanese government is concerned that the determinations, procedures and provisions of the U.S. Tariff Act of 1930 and related regulations are inconsistent with the U.S.'s obligations under the WTO Agreement.

(7) The WTO Seattle Meeting

Many nations are hoping to use the new round of WTO trade talks to attack the United States' anti-dumping laws. U.S. negotiators have strongly opposed the attempts to put the issue of anti-dumping on the agenda.

After the failed passage of the steel quota bill in Washington in June, and the Japanese filing of official complaints with the WTO in November 1999, the USWA and steel executives came to the Seattle WTO Ministerial meeting, calling for the enforcement of anti-dumping procedures, and opposing Japanese proposals to the WTO.

The WTO talks in Seattle ended in failure. U.S. steel workers would clearly have screamed if "anti-dumping" had been brought up as an issue in the WTO's final

communique.

4. The Decline of Japanese Participation

Japanese steel companies have helped to modernize the U.S. steel industry by investing billions of dollars and transferring state-of-the-art Japanese production technologies to U.S. mills. As a result, there are many Japanese-U.S. joint ventures operating in the U.S., creating thousands of new American jobs.

In the face of a final decision by the United States on the dumping of hot-rolled sheet and coils and plates, Japanese steel exports decreased drastically in late 1998 and in 1999.

As this coincides with restructuring in the Japanese steel industry, both domestically and abroad, we are seeing a withdrawal of the share holding by Japanese firms in major U.S. steel mills: (1) Sumitomo withdrew from its 50-50 joint venture with LTV (L-S II Electro Galvanizing Co.) in May 1999; (2) Kawasaki Steel sold 3 million shares of its holding of 8.5 million shares of AK Steel in August 1999; with this, Kawasaki's share decreased to 9.2% from the original 50%; (3) Kobe Steel sold its 50% share in U.S.S./Kobe Steel, Tubular Division, to USX in December 1999; and (4) Kyoei Steel sold its holding of 88% of shares of Ameri Steel to a Brazilian steel company in August 1999.

In addition, Trico Steel, a global joint venture between LTV, BSC, and Sumitomo, has experienced equipment problems which have prevented it from achieving its rated capacity of 2.2 million tons.

5. The Fragmentation of American Steel Companies under Global Restructuring and Competition

During the past two years, Thysen and Krupp, Germany's leading steel companies, merged (in April 1997) and IPO launched a steel unit (in November 1999). France's Usinor acquired Belgium's Cockerill Sambre. Luxembourg's Abed, Europe's second largest steel maker, acquired Spain's largest steel maker, the once nationalized Aceralia, at the end of 1997, adding it to its existing mills in Luxembourg, France, Belgium, Brazil and Germany.

The British-based LNM Group/Ispat International N.V. acquired Inland Steel in 1998, to complement its mills in Indonesia (PT Ispat Indo, 1976), Mexico (IMEXA, 1992), Canada (Sidbec, 1994), Trinidad and Tobago (Caribbean, 1994), Germany (Hamburger Stahlwerk Ruhrot, 1995), Ireland (Irish Ispat, 1996) and Kazakhstan (Karmet, 1996).

In June 1999, British Steel announced a merger with Hoogovens of the Netherlands, under the new name CORUS. CORUS will be the world's third largest steel maker after POSCO (South Korea) and Nippon Steel (Japan).

The Financial Times (June 12, 1999) forecast the consolidation of European steel mills, leading to the survival of four or five companies.

In 1998, U.S. Steel ranked as the tenth largest steel producer in the world. Other American integrated steel mills ranked far below (Table 9), (Figure 4).

Carl Valdiserri, the CEO of Rouge Steel Co., forecast that the industry would be consolidated into four or five companies within a period of roughly eight years, and

Table 9 World's largest steel-producing companies by crude steel output, 1998

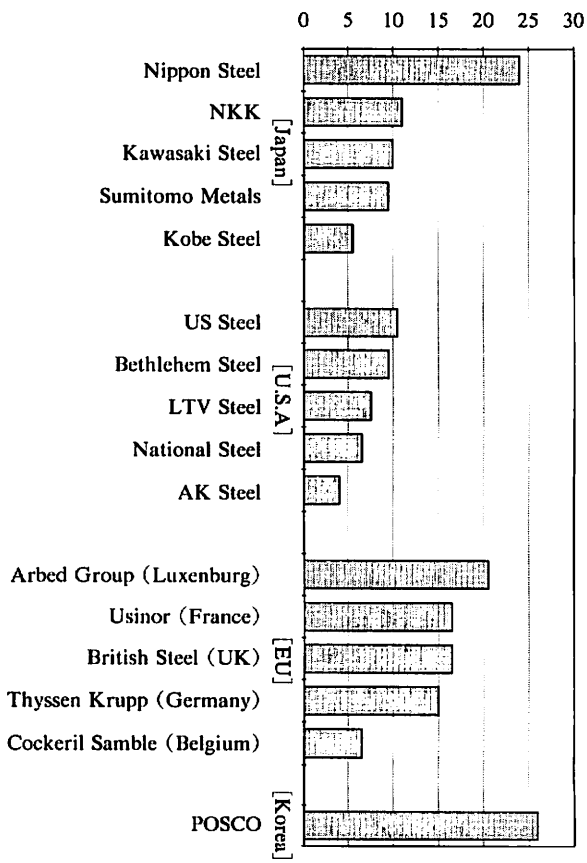
(Unit: Million tons)

POSCO (South Korea)	25.6
Nippon Steel (Japan)	25.1
British Steel + Hoogovens* (CORUS)	22.5
Arbed (Luxembourg)	20.1
Usinor (France)	18.9
LNM/Ispat (Britain)	17.1
Thyssen Krupp (Germany)	14.8
Riva (Italy)	13.3
NKK (Japan)	11.5
USX (United States)	11.0

*Assuming merger

Source: International Iron and Steel Institute: the Economist June 5th 1999

Figure 4 Major Integrated Steel Companies: International Comparison



Note: 1998, Million tons

Source: IISI

the joint ventures and acquisitions of downstream entities would be the key to increasing returns for steel makers, through cost savings, increasing purchasing power, and price setting power (Marcus, [1999]).

Paul Wilhelm, the president of U.S. Steel, has maintained that the mere merging of integrated steel mills would be meaningless (Financial Times, May 14, 1999). Even the emerging minimill Nucor is behind the LNM group. David Aycock, the new CEO of Nucor, admitted that "steel is not just a local market anymore, and our product must be global" (Economist, October 16, 1999).

Fernand Wagner, CEO of Arbed, said that the company would attempt to use worldwide economies of scale to provide a source of high-value steel to global companies and continue to seek strategic acquisitions to reinforce the group internationally (Financial Times, November 17, 1999).

Concluding Remarks

With Washington's help, the U.S. steel industry has beaten back a devastating flood of cheap foreign imports. Imports slipped to 32 million tons in 1999, from a record level of 42 million tons in 1998. A robust economy, led by extraordinary demand for automobiles, has also helped bring prices back to healthy levels. The steel crisis of 1998 seems to have ended.

And yet, future prospects will depend on the continued cooperation of the Clinton administration in playing international watchdog on such issues as dumping. The basic supply shortage of steel will not be solved.

With the advent of developments in e-commerce, such as Metalsite and e-steel, under the IT revolution, further reorganizations and restructurings will likely be seen in the American steel industry on a global basis. In February 1999, GM announced that it had placed long-term purchase orders with global steel makers, mostly in the U.S., accompanied by price cuts (Business Week, March 8, 1999). GM and Ford have launched a huge online network that will force their suppliers and vendors to work together to cut costs. For steel makers, this forebodes another round of cost cuts and slimmer profits (Wall Street Journal, November 26, 1999).

In concluding, I will offer the following evaluation of the resurgence of the American steel industry:

(1) The basic characteristic of the American steel industry is that it lacks the capacity to fulfill the U.S.'s huge domestic demand alone. The U.S. is the world's largest steel market, but no longer the largest producer.

(2) The raw steel production capacity of integrated mills has failed to increase over a number of years, while their finishing capacity has expanded greatly. As a result, they have been growing ever more reliant on imports of foreign slabs and other products to produce value-added steel products. Thus, the U.S. mills are importing massive amount of steel themselves. At the same time, they are claiming an "import surge" is devastating their industry.

(3) Unilateral import restrictions not only violate WTO rules, but also will undermine the competitiveness of the U.S. steel mills in the long run.

(4) We have witnessed an amazing transformation of the American steel industry during the past two decades: the fall of the oligopolistic structure of the inte-

grated mills, and the rise of the minimills. Minimill capacity is up, and the market share of flat products is increasing. Operating profits are up.

(5) Today, following the fragmentation of the industry, American steel companies are not competitive internationally in terms of production and cost levels. The U.S. integrated mills, in particular, have failed to keep pace with the major steel manufacturers of the world, such as Japan, South Korean and the EU.

(6) Further global consolidation and joint ventures in the American steel industry will develop under the Internet revolution. European steel conglomerates are taking the lead, while the Japanese presence is weakening in the American steel industry.

(7) Finally, the resurgence of the American steel industry has been sustained by protectionism over the past three decades.

Notes

1 Steel employment covers only those employees engaged in the production and sale of iron and steel products, as reported to the AISI, and excludes mining and quarrying operations, transportation, warehousing, fabrication and other non-steel producing activities.
The average number of employees reported to the BLS in 1998 was 160,000, larger than those of reported to the AISI (AISI [1998]).

2 "Joint ventures have institutional arrangements aimed at injecting critical technologies and capital for plant modernization and expansion," (Kenny and Florida [1993]).

3 "The government expected the industry to utilize these additional resources for modernization. But the principal effect of protectionist policies was an increase in domestic and imported steel prices," (Crandall [1981], pp. 103-115).

4 In 1992, Geneva and Gulf Steel filed an anti-dumping case concerning steel plates from Russia, Ukraine, South Africa and China. The minimills behaved similarly to the large integrated steel companies.

5 "Steel Alliance" composed of the integrated mills and minimills, started in 1997 to campaign broadly to the public, appealing the advantage of steel usage compared to steel substitute materials such as plastics, aluminum and others.

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