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International Trade in Steel Products: Evidence on 'Dumping' versus Competitive Behavior

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Today, the steel industry of the United States is in a trade policy environment unlike any it has experienced in the past three decades. Restructured, modernized, and price and quality competitive, U.S. steel no longer seeks or enjoys industry-specific protection. Anti-Dumping (AD) and Countervailing Duty (CVD) laws have become, for the steel industry, the *quid pro quo* for free trade. They set the limits on permissible behavior in the marketplace ...

(Brook, 1998, p. 133)

6.1 Introduction: trade policy issues in the iron and steel industry

The latest steel crisis in the United States culminated in President Bush's decision to invoke the Escape Clause under Section 201¹ and to impose temporary safeguards against imported steel products in 2002. The latest crisis dates from the surge in imports in 1998 that led the industry and unions to mobilize their considerable political muscle in support of protective measures. As in every case since the early 1960s, East Asian producers have figured prominently in the trade conflict in steel. In almost all previous trade disputes over steel imports into the US market, protection has been through selective application of anti-dumping (AD) or countervailing duty (CVD) measures and voluntary restraint agreements.²

The imposition of safeguards in 2002 then may be viewed as somewhat of an escalation in the effort to protect the US domestic steel industry.³ The industry and unions may still be unsatisfied and have pressed unsuccessfully for quantitative import restrictions and for a

renewed international negotiation with major steel-producing countries around the globe.⁴

6.1.1 Steel as a "sensitive industry" in the United States: background

The steel industry in the United States was developed initially in the late nineteenth century behind protective tariffs. In 1870, it is estimated that US steel production amounted to 100,000 tons or only one-eighth of the combined production of the two largest producers, the United Kingdom and Germany. However, by the turn of the century, US production amounted to 13.6 million tons, exceeding the combined production of the next two largest producers (Germany was number two with the United Kingdom in third position). It is estimated that US steel output accounted for as much as 56 percent of global steel output by the First World War.⁵

The steel industry in the United States during those early years was, in the words of Baldwin, Chen, and Nelson (1995, p. 158), "the archetype of *big business*." United States Steel Corporation was founded in 1901 and was the very first billion dollar enterprise in the United States. It controlled over one-half of all steel production capacity. Over the next several decades, the industry remained highly concentrated with technology characterized by large-scale integrated production units initially supplied with coal and iron ore from US domestic sources, but soon reliant to greater or lesser extent (depending on plant location) on imported ore. Among the key inputs into steel production is bauxite upon which the industry is nearly completely import dependent (Frank, 1999).

The high concentration and pricing behavior of the industry made it a likely candidate for antitrust action. Price fixing was a blatant feature of the industry in the early years of the twentieth century (Burnham, 1981). However, no antitrust action was ever successfully mounted against the industry in the inter-war period.

Price leadership by US Steel continued to characterize the industry in the post-war decades and led to several congressional investigations and ultimately, a show-down over pricing with President John F. Kennedy in 1962. The initial inefficacy of the steel industry in obtaining protection under the terms of the Anti-Dumping Act of 1921 in 1963 may, in part, have been due to the strained relationship between the industry and the administration at the time.⁶

The relationship between big steel, labor, and the government underwent substantial change during these years.⁷ Unionization of the work

force in the large-scale integrated mills was complete and wage levels were amongst the highest in any industry. Wage disputes with organized labor led to a prolonged strike in 1959 and this opened the way for foreign producers to gain market share. In order to avoid such episodes in future, the US steel industry institutionalized an accord with organized labor. However, this accord came at the very time that foreign competitors with the latest steel technology and newest mills were expanding production and also at a time of structural change in the US economy that would lead to slower growth in demand for steel, as the overall steel content of GDP began to fall. Even prior to the 1959 strike and the 1963 AD petition, European and Japanese producers were beginning to expand market share in the United States (Baldwin *et al.*, 1995, p. 160).

This led the industry, both labor and capital, to begin to organize themselves politically in order to improve relationships with Congress and the executive branch in order to obtain protection from foreign competitors.

6.1.2 Trade protection and structural change in the US steel industry⁸

By the latter half of the 1960s, Japanese steel was making substantial inroads in the US market and in 1968 such imports rose to a volume of 7.5 million tons, prompting the US industry to demand passage of quantitative limits on steel imports. The Johnson Administration responded by negotiating voluntary restraint agreements (VRAs) that limited Japan to a volume of 5.8 million tons per year with 5 percent annual expansion in the quota limit for a three-year period. The business cycle downturn that began in 1969 and continued into 1970 in the United States, however, substantially reduced demand and imports from Japan fell to less than 20 percent of the quota.⁹ The economic recovery in 1971 led to a renewed surge in steel imports and Japanese exporters not only filled their quota, but made use of the allowance in the VRA to carry forward the unused quota from the previous two years. This led the Nixon Administration to negotiate a three-year extension of the VRAs under tighter restrictions. However, after these VRAs lapsed in 1974, there was an even greater surge in imports during the recession of 1975, when domestic production fell while imports rose by 60 percent. This prompted the industry and unions to mount an all-out campaign for relief from import competition characterized by the filing of AD petitions and a campaign against unfair trade aimed at winning the support of Congress and the public at large.

The integrated steel producers in the United States were not only under pressure from low-cost imports from East Asia and Europe but were also experiencing new domestic challengers for market share in the form of mini-mills that made use of electric furnaces and continuous casting. The latter technology cut costs by eliminating several steps in the production process. Furthermore, the mini-mill sector made use of non-union labor and expanded production in regions outside of those that were served by the integrated mills. Mini-mill production provided efficient alternatives to the production of the integrated but antiquated large-scale US producers. Hence, structural change and improvements in productivity clearly had become essential for the survival of the large-scale integrated sector.

The trigger price mechanism (TPM) was an innovation to accommodate the steel lobby without alienating important US allies such as Japan. In the latter 1970s, the steel industry filed AD petitions so numerous that they threatened to overwhelm the capacity of the Carter Administration's trade authorities. In addition, the steel industry was successful in establishing the Congressional Steel Caucus with over 150 members from the House and the Senate. Opposition to steel imports was also mobilized through "Buy America" campaigns.¹⁰ The efforts to restrict imports of Japanese steel against a backdrop of large Japanese current account surpluses and mounting US current account deficits threatened to result in outright quantitative restrictions.

Import penetration, plant closures, and layoffs led to increased protection in the form of fast-track AD measures through the TPM and to successive rounds of export restraint agreements (Brook, 1998, p. 137). The idea of the TPM was to establish a reference price based on the constructed value of the most efficient producers of the products in question. Any imports priced below the reference price were considered to be dumped and fast-track AD investigations would be immediately launched, with duties rapidly assigned equal to the calculated margin of dumping.

Japanese steel exporters were prepared to accommodate the United States and were even willing to consider orderly marketing arrangements for steel along the lines of the Multi-Fiber Arrangement (MFA) that governed market access in textiles and apparel. The TPM succeeded in reducing imports' share in US apparent consumption, and in raising domestic steel prices, capacity utilization, and profit. These gains, however, were short-lived. By 1980, a new round of industry AD petitions (this time directed against European producers) scuttled the first TPM and led the Carter Administration to hike the new TPM by 12 percent

and to alter the rules regarding the conversion factor in determining prices and dumping margins. Even this failed to satisfy the industry and a new round of AD petitions and CVD cases resulted in 1982. The new Reagan Administration undertook negotiations that resulted in VRAs involving the Japanese and European producers that would regulate imports until 1992.

While these VRAs were formally enforced over Japanese and European producers, the United States brought informal pressure to join the VRAs on upstart producer/exporters from Taiwan (CSC: China Steel Company) and Korea (POSCO: Pohang Iron and Steel Company), beginning in 1986. It appears that CSC complied as exports were reported to have doubled from 1985 to 1986 only to be cut back to 1985 levels in 1987 (Baldwin *et al.*, 1995, p. 171). These informal VRAs were augmented by AD and countervailing cases from time to time in both the 1980s and 1990s. During the two decades, dramatic improvements in productivity were realized in the US steel industry that brought output per man-year worked more or less into line with that of Japan. Obsolete plants were closed and employment in the integrated steel mills was cut drastically.

Hufbauer and Wada (1999) provide some data on longer-term trends in the industry: employment which totaled 521,000 in 1974 fell to 163,000 in 1997 (just before the present steel crisis began) and fell further to 142,000 in 2001; the share of production provided by the dynamic mini-mill sector doubled between 1975 and 2000, reaching 45 percent of total steel output in the United States.¹¹ Hufbauer and Goodrich (2001) report that output per man-year increased by 50 percent in the decade of the 1990s from 400 tons to 600 tons. Lindsay *et al.* (1999) report that total production of steel in the United States rose from a low of 61.6 million tons in 1982 (when the VRAs were introduced) to 89 million tons in 1993 and further to a peak value of 105.9 million tons in 1997 just before the recent crisis broke out.

Import penetration in the US iron and steel market (ISIC 371) rose from 13.6 percent in 1988 to 15.7 percent in 1994 but fell back to 14.0 percent in 1997 (James and Movshuk, 2003). A statistical test indicates there is no significant trend in world import penetration in the US apparent consumption of iron and steel between 1988 and 1997, but there is a negative and significant trend in import penetration from Japan in apparent consumption of steel over the same time period.¹² Imports from Japan, Korea, and Taiwan together were only 4.2 percent of US apparent consumption in 1988 and fell to just 2.2 percent in 1997, the year before the present crisis commenced. These shares surged in 1998 with a dramatic increase in US import volume from Japan of over

4 million tons, from Korea of 1.8 million tons, and from Taiwan of 300,000 tons compared with 1997.¹³ However, in 1999 import levels fell back nearly as dramatically as they had risen: by 3.5 million tons in the case of Japan and by 400,000 tons in the case of Korea. The volume of imports from Taiwan continued to rise but accounted for only 2.7 percent of total imports.

The United States reduced the volume of its steel imports from Russia by over 4 million tons in 1999 compared with 1998. The reason for the sharp decline in imports is not immediately decipherable as numerous AD petitions were filed in these two years, a steel quota bill was passed by the House but was narrowly defeated in the Senate, and the administration negotiated a VRA with Russia. Even though US steel imports rebounded in 2000, they remained well below the volume reached in 1998 and in 2001 imports fell by over 5 million tons in the first half of the year compared with the same period in 2000.

However, the pressure on the administration and Congress to increase protection mounted with mill closures, bankruptcy filings and layoffs of thousands of steel workers. Although the preferred solution of the integrated steel industry of introducing strict quotas on imports and negotiating a global agreement to end subsidies and reduce excess capacity was not realized, it was significant that Section 201 of the Trade Act of 1974 was used and that safeguards were put in place in March 2002. Although terminated in December 2003, the use of safeguards indicated an escalation of the efforts of the US government to restrict steel imports compared with more selective protection through AD.

6.1.3 Policy issues to consider in recent steel trade disputes

Under the General Agreement on Tariffs and Trade (GATT), a Safeguard Provision (popularly known as the Escape Clause) was introduced in Article XIX based upon a similar clause found in the 1943 Reciprocal Trade Agreement that the United States negotiated with Mexico.¹⁴ The insertion of an Escape Clause into the GATT was intended by the US executive branch to allay fears in Congress regarding the GATT trade liberalization.¹⁵ Countries employing safeguards may select to use either tariffs (article 5) or quotas (article 9) and in the former case the tariffs shall apply to all sources of imports, while in the latter the quota allocation is determined by the share of each exporter in a previous representative period. All that is required of a contracting party to invoke safeguards was to show that imports were increasing either absolutely or relative to domestic demand or consumption and that this

increase had been unexpected or unforeseen. The injury test was terribly vague and no proof of causation running from increasing imports to injury or threat of injury was required.

Proponents of the safeguard escape clause have argued that it is useful as a safety valve and leads otherwise hesitant countries to offer lower and more tariff bindings than otherwise. Furthermore, the presumption that safeguards require the country invoking the escape clause to provide compensation to the exporting countries limits the spurious use of Article XIX.¹⁶

The compensation requirement and the issues surrounding the right to use safeguards selectively had led to some controversy within the GATT regime,¹⁷ but these issues were largely settled with the Uruguay Round Safeguards Agreement (URSA). First, the compensation principle is retained. However, if the safeguards are withdrawn within a three-year period, the right of exporters to compensation is withheld. The URSA also compromised on the issue of selectivity, allowing some relaxation of the principle of non-discrimination so that developing countries are excluded from the safeguard as long as they are minor exporters (under 3 percent of import share). In addition, the URSA made "grey area measures" (voluntary restraint agreements) illegal and all such existing measures had to be ended before the end of 1999 (among contracting parties). The other improvements introduced by the URSA include strict time limits on safeguards (maximum of four years with possible extension in the case of serious injury for additional four years), a better definition of injury (e.g., evidence of lost sales, employment, profit, plant closures), and more comprehensive requirements for notification and surveillance of the safeguard measures.

The decision of the US administration to use the escape clause in 2002 to protect the domestic steel industry needs to be explained and analyzed in some detail. The use of selective measures under Title VII (AD and CVD) has not succeeded in preventing plant closures and layoffs. As discussed above, these types of measures harass exporters and were more successful when they led to export restraints. However, under the Uruguay Round Agreement grey area measures had to be phased out among contracting parties by year end 1999 and can only be used against non-member states.

Following the surge in steel imports in the United States that took place in the wake of the Asian financial meltdown of 1997, there was intensified pressure brought to bear by the steel industry lobby for greater protection than allowed under current US trade laws. The industry wished to invoke strict quantitative restrictions in the form of import

quotas, along lines of the MFA which had long protected the US textile industry. The Visclosky bill which would have imposed quotas on steel imports passed the House of Representatives 289–141 in March 1999 and was strongly opposed by Clinton Administration trade officials who argued it could lead to a trade war. Ironically, as this bill was moving ahead, steel imports had already begun to recede and steel prices to rise. As an alternative, Charlene Barshefsky called for a strengthening of current US trade laws, particularly Section 201. In the end, the Senate defeated the quota bill but moved to strengthen US trade laws.

The protective effect of AD was increased after the Clinton Administration signed into law the amendment that Senator Robert Byrd of West Virginia (a steel state) championed. This change in the law transfers AD duty receipts from the Treasury to the complainant industry, which could lead to transfers to industry of up to US\$200 million per year. Hence, the industry could not only derive rent from the tariff protection but also from the tariff collection. The change in US AD law was immediately challenged in the WTO by the EU, Japan, and Korea.

One of the key points in analysis of the new Bush Administration's choice to use Section 201 is the fact that West Virginia, Ohio, and Pennsylvania swung away from the Democrats and Al Gore in 2000 after Clinton threatened to veto the Visclosky Steel Quota Bill late in 1999. During his campaign, candidate Bush had promised to protect steel producers and workers in these three states and in 2002 the congressional seats in these states were up for grabs in the mid-term election. Safeguards had been discussed as an alternative to AD as a remedy for the problem in several influential circles. For example, the Federal Reserve Bank of New York published an article in its *Current Issues in Economics and Finance* in August 1998 that argued for safeguards over AD measures (Klitgaard and Schiele, 1998). Charlene Barshefsky is quoted in the financial press (*The Daily Yomiuri*, March 25, 1999, p. 16):

The steel crisis has demonstrated that there is room for improvement in our trade laws, and particularly to Section 201, to ensure that they deliver strong, effective relief in an expeditious manner.

In addition to the focus on Section 201, a major effort was made to achieve an export restraint agreement with Russia. A preliminary agreement to fix minimum prices and to cap exports was reached in early 1999 but was objected to by industry leaders and by key senators such as Jay Rockefeller of West Virginia. However, in July of 1999, a last minute deal was reached that limits Russia to exports of US\$600 million

of hot-rolled steel and the same amount for cold-rolled steel through 2003.

Meanwhile in the WTO, the United States suffered several setbacks in panel rulings pertaining to AD measures: in 2000 there was a WTO finding that the US AD law of 1916 contained provisions for penalties, including fines and imprisonment of foreign producers found to be selling at prices below market value, that were illegal under the global trade rules. In 2001, a WTO panel ruled against US AD duties on steel imports from Japan ruling that the US Department of Commerce wrongly refused to consider information provided by Japanese steel producers. The Byrd amendment to US AD law is also currently under challenge. Under these circumstances and faced with mounting layoffs and plant closures during a year of congressional elections, one can understand why the administration decided to invoke Section 201 and impose more general rather than highly selective duties on steel imports.

Some simple arithmetic allows us to shed some light on the implications of the safeguards for East Asian steel markets and producers. Canada and Mexico account for over 8 million tons of shipments to the United States (using 2000 as a representative year). Their exclusion from the safeguard has the effect of preventing that much more steel from entering the international market, but also provides Canadian and Mexican producers an opportunity to expand their market share in the United States at the expense of large East Asian producers and those in the European Union. The other major suppliers that are not excluded, including the European Union, South Africa, and Australia, account for around 20 million tons out of a world total of 36 million tons shipped to the US market (again using 2000 as a representative year). In value terms the leading suppliers affected by the Section 201 case shipped US\$9 billion worth of steel in 2000 compared with total US steel imports of US\$17 billion (Canada and Mexico accounted for US\$4 billion). In volume terms over 55 percent of shipments to the United States may be affected (in value terms about 53 percent may be so affected).

The obvious point is that US steel protectionism has global implications and East Asian steel producers will almost certainly face lower margins, greater import competition and related pressures to restructure or retrench, including closures of marginal producers and layoffs. Fortunately, the United States is relying on price-based protection rather than quantitative restrictions so that the global steel glut resulting from US Section 201 will force out the marginal producers first.

At the time of writing, East Asian policy makers had several choices to make in response to the Section 201 safeguards. First, they might choose

not to respond immediately, but to wait and see what impact there is on their own producers and consumers. Consumer countries like Singapore and Hong Kong could enjoy discounted supplies of imported steel. Second, they could choose to retaliate against the US action. This was the likely course for major producer-exporter countries. The method of retaliation then had to be chosen. One option was to challenge the 201 safeguards in the WTO (the European Union, China, Japan, and Korea pursued this as part of the overall strategy). Another was to threaten to impose restrictions of equal value to the losses of exports in the US steel market, though doing so was not an automatic option under the URSA. A third option was to raise protective barriers in the steel sector (depending on tariff bindings if MFN tariffs were to be raised) but also through AD or CVD measures. A fourth option was to choose to cooperate and to work towards a renewed negotiation for a Multilateral Steel Agreement (MSA). There would be a number of major issues that needed consideration in launching such a negotiation. For one, would it be undertaken under the WTO umbrella or outside of it? If inside the WTO, how would the interests of major non-member producers such as Russia and Ukraine be accommodated? If outside the WTO, would the agreement focus on reducing excess capacity or upon trade remedies along lines of the defunct MFA?

These options were not exclusive and the choices made depended crucially on each country's particular circumstances. The invocation of safeguards added another layer of protection to existing protection through MFN tariffs, AD measures and CVD, and export restraint agreements. It raised the bar further for emerging market steel producers such as Ukraine and Kazakhstan. Although the US safeguard action was strictly time delimited, this has not been the case for AD measures, despite the "sunset review" required by the WTO after AD duties have been in place for five years.¹⁸ In fact, as of July 2002, over 75 percent of steel product AD measures placed under sunset review resulted in affirmative decisions to keep AD measures in place.¹⁹

Hence, even after the safeguards were lifted, AD measures dating from the outbreak of the latest crisis from 1998–2001 would be in place to protect US integrated steel in many products for most sources of imports. How valid the findings of these AD rulings are in the case of Japan and other East Asian countries is the subject of the following sections of the chapter. Empirical analysis of trade, consumption, and production, as well as movements in relative prices is conducted with this question in mind.

6.2 Trade in iron and steel: import surges

This section examines certain patterns of world steel trade, with a focus on US imports and East Asian exports to the United States. We also examine the diversionary impact US AD duties have had, especially those initiated in the wake of the 1997 Asian financial crisis.

Claims of dumping in the US steel market by the steel industry against imports are far from new and are viewed by many as a purely protectionist move. Furthermore, the evidence in favor of truly strategic dumping on the part of US trading partners is often "economically unjustified" (Prusa, 1999). However, significant declines in steel import prices frequently result from extreme exchange rate changes, as well as from excessive capacity due to locally and regionally depressed demand conditions. Nevertheless, one can often find clear evidence of dramatic surges in certain steel products that ultimately elicit AD claims. Thus, to the casual observer the AD actions may seem valid. A look at Table 6.1 gives us some idea of this. The shaded rows depict rapid increases in exports to the United States, particularly on or around the time of the Asian financial crisis. In the case of Japan, Korea, and Taiwan, exports to the United States more than doubled, a year-on-year increase of over 100 percent. Russia and India have also doubled exports (though this trend seems to have begun prior to the crisis) and continued to see rapid growth until being slapped by US AD suits coupled with the US slowdown in 2001.

Table 6.1 US imports of steel products (short tons)

Country	1996	1997	1998	1999	2000	2001
Canada	4,626,656	4,633,383	4,831,995	4,940,501	5,169,564	2,836,306
Brazil	2,756,588	2,806,811	2,705,122	3,651,937	3,404,666	1,895,669
Mexico	2,836,702	3,154,460	3,111,734	3,545,349	3,175,835	1,800,936
Korea	1,461,038	1,692,703	3,516,698	3,112,957	2,905,665	1,669,884
Japan	1,855,853	2,371,724	6,457,694	2,936,958	1,978,267	1,056,679
Germany	2,494,880	2,246,889	1,614,225	1,598,418	1,883,111	841,665
China	558,923	570,233	724,133	914,862	1,690,399	686,530
Russia	1,662,535	3,308,099	5,237,131	1,215,864	1,524,272	619,333
Taiwan	1,211,338	1,997,747	4,927,782	937,276	1,288,485	820,555
Ukraine	781,961	439,672	718,966	593,594	1,184,289	674,727
India	367,504	213,003	731,627	659,135	995,144	644,236
France	1,241,005	1,017,166	1,030,007	1,146,353	941,621	416,014

Note: 1 short ton equals 0.90718 metric tons.

Source: US International Trade Commission (various years).

Other large exporters to the United States such as Canada, Brazil, Mexico, and France seemed to have kept levels fairly flat. Interestingly, China also seems to have shown some restraint in exports to the United States during 1998, though imports from China nearly tripled between 1997 and 2000.

6.2.1 Shifting excess capacity during the Asian financial crisis

Table 6.2 shows a more focused story of how the Asian financial crisis likely led Japan and others to dump steel on the US market. We focus on hot- and cold-rolled steel here, as it is a large category, accounting for about 20 percent of US iron and steel imports in 2000, and is the target of the most recent high profile AD suits levied against exporters to the United States. As we can see, Japanese exports of hot- and cold-rolled steel to the United States rose dramatically from 1997 to 1998. Then, in 1999 and 2000, the percent of Japanese exports of rolled steel to the United States dropped to virtually nil.

It should come as no surprise that the United States filed AD suits against Japan in October 1998 (for hot-rolled) and June 1999 (for cold-rolled). One can clearly see the effects in Table 6.2 where there is a sharp drop in imports from Japan at that time. The United States continues to levy AD duties of up to 30 percent against Japanese and other imports (see Section 6.3 for a more detailed discussion of recent AD actions).

Table 6.2 The shares of Japanese exports of HS 7208 ("Flat-rolled steel products") by trading partner (percent)^a

Year	United States	NIEs ^b	Korea	ASEAN	Taiwan	China	EU-15
1991	4.9	41.9	28.1	32.2	7.8	10.4	0.1
1992	5.2	33.3	20.7	31.7	6.3	9.5	0.1
1993	1.2	23.6	9.6	19.3	9.1	46.7	0.1
1994	7.4	36.1	25.3	28.1	5.3	22.0	0.0
1995	3.8	40.6	26.6	32.7	8.8	17.3	0.0
1996	5.2	47.2	31.7	30.5	11.4	8.5	0.5
1997	10.7	43.8	29.4	28.8	11.3	5.5	0.2
1998	36.1	22.1	13.0	17.8	7.1	4.5	0.5
1999	1.0	46.3	33.9	31.5	10.6	4.4	0.2
2000	0.3	50.9	39.8	28.4	9.2	5.7	0.0

Notes

^a HS 7208 is "Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, hot-rolled, not clad, plated or coated." HS 7208 represented approximately 20 percent of Japanese total exports in Steel (HS 72 Iron and Steel) in 2000.

^b The NIEs are South Korea, Taiwan, Hong Kong, and Singapore.

Source: Japan Tariff Association (various years).

Table 6.3 Real GDP growth rate (in real local currency)

Year	United States	Japan	EU-15
1996	3.7	3.6	1.7
1997	4.5	1.8	2.6
1998	4.2	-1.2	3.0
1999	4.4	0.2	2.9
2000	3.7	2.8	3.6
2001	0.5	0.4	1.7
2002	2.2	-0.3	1.1
2003	3.1	2.7	0.8

Source: International Monetary Fund (2004).

The data are also clearly consistent with the story presented earlier in the chapter that as demand in Asia collapsed Japanese (and other Asian) producers sought other markets for their surplus steel. America, with relatively strong growth, was one such market (see Table 6.3 for GDP growth rates of the United States, Japan, and Europe during the late 1990s). Looking at the columns for the United States and the newly industrialized economies (NIEs) in Table 6.2, in 1997 NIEs represented 44 percent of Japanese exports of rolled (hot or cold) steel while the US share was 11 percent. In 1998 the situation changed dramatically with the United States purchasing 36 percent of Japanese exports while the share of the NIEs fell to 22 percent.

If we look at the data for 1999, when Asian countries began to bounce back, the NIEs' share returns to its historic value, whereas for 1999 and 2000 the US share is still virtually zero. This is in direct response to the massive threats of AD measures against Japan (and other producers) by the United States during this time as well as the US slowdown.

Although the share of Japanese exports going to Europe more than doubled in 1998, the total amount was negligible because Japan ships only about 0.2 percent of its total rolled steel exports to the European Union. It does appear that the United States is the dumping ground for excess capacity rather than other strong economies in Europe. Hufbauer and Wada (1999) suggest that informal cartels in both Europe and Japan prevent freer market access for US and other foreign steel producers.

6.2.2 Prices

As we can see from Figures 6.1 and 6.2, the dramatic change in Japanese export prices in hot- and cold-rolled steel help explain part of the story

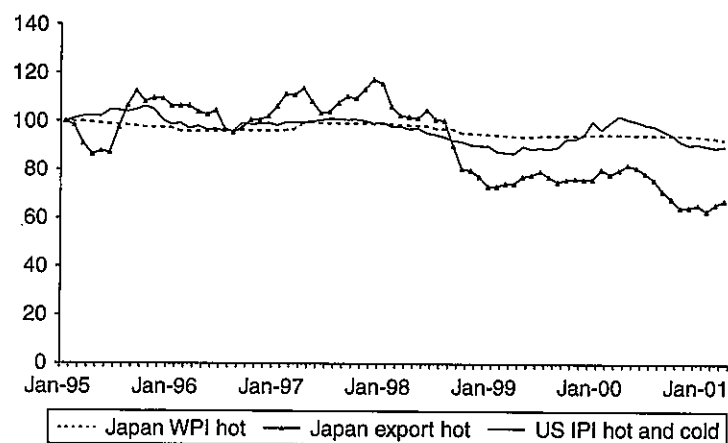


Figure 6.1 Price indices for hot-rolled steel (January 1995 = 100)

Sources: Bank of Japan (various years); Japan Tariff Association (various years); US Bureau of Labor Statistics (various years).

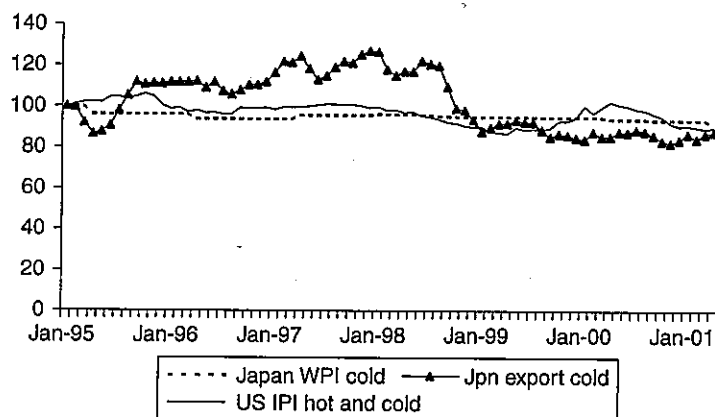


Figure 6.2 Price indices for cold-rolled steel (January 1995 = 100)

Sources: Bank of Japan (various years); Japan Tariff Association (various years); US Bureau of Labor Statistics (various years).

of how Japanese exports to the United States rose sharply following the Asian financial crisis.²⁰ Japanese export prices have fallen relative to both Japan's own domestic wholesale prices and US import prices from all countries. Prior to the Asian financial crisis, Japanese wholesale prices were, in fact, rising relative to export prices as well as US import prices.

Also note that the wholesale price index (WPI) for both products in Japan is very flat. US import price indices are also stable relative to the wide swings in the price of Japanese exports of steel. These price swings, coupled with rapid increases in exports to the United States, are consistent with either "sporadic dumping" (Chacholiades, 1990) from overproduction in the wake of unanticipated demand shifts or dumping as a result of price discrimination in a monopolistically competitive market.²¹

Such a drop in the export prices from Japan to the United States is also wholly consistent with pricing-to-market (PTM) behavior (see Marston, 1990). Note that in Figures 6.1 and 6.2 the US import price, which uses a US dollar base, does not fluctuate very much while the yen-based export prices exhibit wide swings. If we look at Figure 6.3 which tracks the movements in the yen/US\$ exchange rate and the Japanese export prices for the broader category of iron and steel, we can visualize evidence of pricing-to-market. Note, in particular, the sharp appreciation of the yen in the 1998–99 period (from approximately 143 yen/US\$ in July of 1998 to 115 in August 1999) and the nearly simultaneous drop in yen-based export prices. That is to say, to maintain roughly the same price in US dollars, it would have been necessary to drastically reduce the yen price of steel during that time even if there was no excess capacity.

6.2.3 Evidence of pricing-to-market

In Figure 6.3, it seems evident that the yen-based export prices move somewhat in tandem with the yen/US\$ exchange rate and would indicate PTM behavior. We test this econometrically by determining whether or not the two series have a common trend or, in other words, are cointegrated.²² We conducted a test for cointegration between the log of Japanese export prices of iron and steel and the log of the yen/US\$ exchange rate for monthly data over the 1995–2002 period. We found a strong positive long-run co-movement of the two series (see the Appendix for details). That is to say, when the yen appreciates vis-à-vis the US dollar, the yen-based export prices to the world (and most likely to the United States) fall.

In the literature, PTM is done rationally and efficiently to retain market share in the United States and elsewhere and not for predatory reasons *per se*. Studies often find that Japanese firms engage in considerable PTM behavior, and more so than say, US firms (Marston, 1990). Moreover, when examining Japanese export pricing behavior to the United States, Asia, and the European Union, more PTM occurs in the US market than any other market (Sasaki, 2002). Therefore, we might expect that East Asian, particularly Japanese, steel producers price-to-market to a large

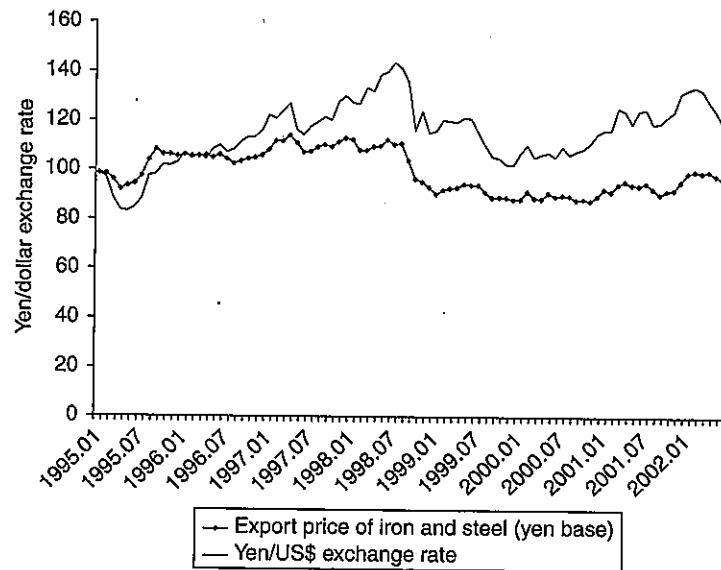


Figure 6.3 Japanese export prices and yen/US\$ rate

Sources: Bank of Japan (various years); International Monetary Fund (2003).

degree. This partially explains the ease in which AD suits against East Asian exporters to the US market can be constructed.

As described above, a very plausible story for the dramatic relative fall in Japanese export prices is, of course, PTM behavior. Another likely reason for the slight drop in the Japanese WPI is the drop in aggregate demand in Japan (-1.1 percent GDP growth in 1998; see Table 6.3) and in the East Asian region in 1998. Thus, given the short-term fall in demand and prices in Asia, as well as the sharp appreciation of the yen in the mid-1990s, it is only natural that Japanese firms, seeking to minimize layoffs (see Chapters 2, 8) and avoid high shutdown costs, would be forced to seek other markets and sell their products at a discount.

Therefore, one can see how it might be easy for a US steel firm to find data to validate claims of dumping which is defined as either by selling below average cost, or from data such as these, pricing below one's domestic market price. If we again look at Figures 6.1 and 6.2 we see that the drop in relative prices, which began shortly before the crisis but really picked up steam in mid-1998, is ultimately about 20 percent lower than the overall US import price index and indeed Japan's own domestic prices. Thus, the US imposition of dumping margins of up to 30 percent seems roughly consistent with these movements.

This is not to justify the AD actions, as it seems clear from the data that regional demand conditions and exchange rate movements were the likely culprits, rather than predatory dumping. Yet, it demonstrates the ease in which dumping can be validated under the rough and economically unsound dumping criteria that exist.

6.2.4 The overall picture

The above-mentioned data on import values and prices in the United States gives AD proponents ample anecdotal evidence to support their view. However, the above data have also shown that the likely explanation for the dramatic increases in exports of steel from East Asia to the United States was the Asian financial crisis, which drove many Southeast and East Asian economies into negative growth, as well as associated exchange rate movements. In addition, Japan's sluggish growth since 1992 has forced Japan, Korea, and newer big players on the world market such as Russia and India to more aggressively target the US market for their goods. Any claims that Japan, Korea, Russia, and others are strategically dumping is not a likely story given the large number of exporting nations in this post-Cold War era.

Moreover, though there are certainly periodic surges in certain types of steel from year to year which elicit claims of dumping, changes in the overall pattern of import behavior in the United States is far less dramatic. Figure 6.4 shows that overall US imports rose during 1991–2000, before falling in 2001 when the US economy experienced a significant slowdown

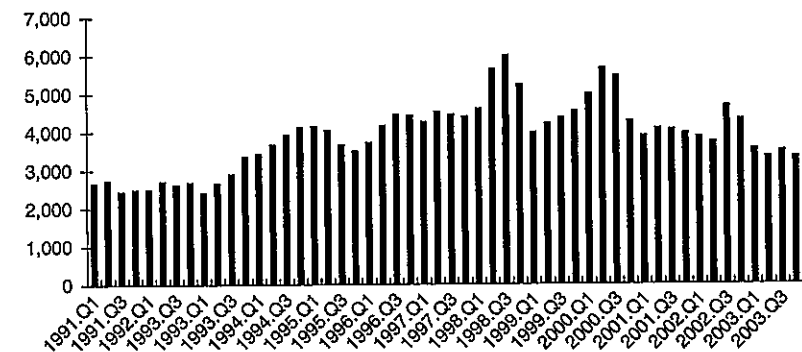


Figure 6.4 Real US imports of iron and steel (\$million in 2000 prices)

Note: The import values are obtained from the US Customs Service Imports of "Iron and Steel" not seasonally adjusted (SITC 67, Rev. 3). These values are then deflated by BLS Import Price Index data.

Sources: US Bureau of Labor Statistics (various years); US International Trade Commission (various years).

(Table 6.3). However, it is not clear that foreign import penetration is on the rise. The apparent consumption of imports reached 19 percent in 1998, but it has been almost as high before, reaching 16 percent in the mid-1980s (Table 6.4). The rise in import penetration may be a cyclical phenomenon that, unfortunately, elicits a cyclical increase in AD actions by the United States. As mentioned earlier in this chapter and by James and Movshuk (2003), there is no statistical evidence prior to 1997 of an increase in apparent consumption of imported steel in the United States. It may be, in fact, that AD measures and previous VRAs have held in check the growth of import penetration in the US steel market.

While imports may or may not be on the rise in relative terms, steel jobs in the United States have long been on the decline. However, rising productivity, high union wages, and enormous pension liabilities, the

Table 6.4 US iron and steel: output, exports, imports, and apparent consumption (values in current US\$ million; shares in percent)

Year	Total US output	US imports from world	US exports to the world	Import shares of apparent consumption
1981	87,500	12,542	3,179	13
1982	57,000	9,128	2,457	14
1983	56,600	7,933	1,658	13
1984	65,800	11,976	1,514	16
1985	60,900	11,175	1,380	16
1986	56,940	9,694	1,239	15
1987	63,500	10,374	1,429	14
1988	77,200	11,939	2,300	14
1989	78,110	11,710	4,249	14
1990	75,740	11,246	3,925	14
1991	68,860	10,345	5,052	14
1992	71,296	10,464	4,428	14
1993	75,617	11,539	4,115	14
1994	84,710	15,690	4,495	16
1995	91,515	15,499	6,618	15
1996	96,720	17,124	6,165	16
1997	94,328	17,650	7,136	17
1998	93,173	20,563	6,953	19
1999	87,428	16,315	6,302	17
2000	93,272	19,185	7,326	18

Note: Import shares are of apparent consumption and are calculated as the ratio of US imports from the world to (US output plus US imports from the world less US exports to the world).

Sources: Statistics Canada (various years); United Nations Industrial Development Organization (various years).

so-called legacy costs in the industry, are at the root of declining jobs in the US steel industry rather than unfair trade (Hufbauer and Goodrich, 2001; Section 6.1 of this chapter).

Despite productivity increases and technological advances in the US steel industry, many newly industrialized countries have long had the same (or even superior) technology as US firms, in addition to lower labor costs. Hence, the increases in import penetration are likely to continue. One can reasonably expect that India (now the lowest cost producer for some products), among others, may capture ever larger market shares in the United States. If the current AD actions and counterclaims by Japan, the European Union, China and others in the steel industry are not effectively resolved in the WTO (or unless the President and Congress can find other compensatory schemes to eliminate legacy costs and excess capacity in US steel), we can only expect more of the same rent-seeking activities, not only against East Asian producers, but Eastern Europe, Central Asia, and India as well.

6.3 Protective responses: the prevalence and patterns of AD actions in steel trade

Although the recent spate of AD duties filed by the United States and other nations in the steel industry has gained a great deal of attention in recent years, the use of AD duties in the steel industry is not new. The first use of an AD duty was, in fact, in the steel industry in 1906. Perhaps surprisingly, it was not initiated in the United States but instead in Canada with accusations that US producers were unfairly dumping steel in the Canadian market. The United States has traditionally been the main user of AD actions over the last several decades, however, having enacted its first AD legislation in 1916 to protect primarily against European imports (Prusa, 1999).

Between 1980 and 1988, 411 AD investigations and 332 CVD investigations took place in the United States alone. In the 1980s traditional users (Canada, New Zealand, Australia, the United States, and the EC) accounted for 95 percent of the suits. This is no longer the case and overall numbers have risen dramatically, particularly because of new users, such as Mexico, Argentina, and Brazil. From 1987 to 1997 over 2000 cases were filed worldwide. In 1997 the United States alone had 302 AD orders still in force and is nearly matched by the European Union (246) and India (248). And some, perhaps unexpected, new intensive AD users such as South Africa (156) have emerged (Prusa, 1999; World Trade Organization, various years).

There has also been an increase in AD measures use by East Asian countries. Japan has shown considerable restraint, initiating only two AD actions in 1995–2001, however, which compares to 255 for the United States over the same period. Yet, for other major economies in the region, use seems to be on the rise. The number of AD initiations in 1995–2001 for selected countries are as follows: South Korea: 47; Taiwan: 6; Indonesia: 41; Malaysia: 17; Thailand: 5; and India: 247. Singapore and Hong Kong apparently have not filed any actions. China recently notified the WTO of its own domestic AD legislation in May 2002 and by December 2003 it had initiated over 50 AD cases, including several in steel (World Trade Organization, various years). Correspondingly, in January 2004 it imposed AD duties on imports of cold-rolled steel products from Korea, Taiwan, Kazakhstan, Russia, and Ukraine of up to 55 percent (*Far Eastern Economic Review*, January 22, 2004, p. 12). China thus appears to be an increasingly frequent user of AD actions like many other WTO members.

In the 1990s, 2200 cases were filed worldwide, a decade-on-decade increase of 37.5 percent. Perhaps this is not surprising given that successive GATT rounds have eliminated or severely restricted virtually all other trade tools, including discretionary tariffs, import quotas and export restraint agreements, at least for most manufactured products in industrialized countries. Thus, for many countries, particularly the United States, the AD duty is one of the only tools left.

6.3.1 Steel and AD actions

Iron and steel has been the major AD filing category in the United States and in the world (Miranda *et al.*, 1998). Of the United States' 249 AD orders currently in effect, over 120 of them are in the iron and steel category. Therefore, the future of domestic AD legislation and WTO rulings will continue to have a large impact on world trade in steel.

To be sure, though the media gives the steel rows quite a bit of press, the actual effect of total AD actions overall on trade is rather small. While AD suits have grown considerably in the last two decades, they still cover only 2 percent of total US merchandise imports. Still, the trade diversion effects for any one product of such actions can be considerable, which might result in large associated efficiency loss.

Prusa (1999) examined the effects of US AD action on US imports. He found the average "dumping margin" to be approximately 40 percent over the 1980–94 period. The median duty was 16 percent. Of the cases 20 percent had duties exceeding 50 percent and 10 percent exceeded 100 percent. Additionally, Prusa found that in cases where a case was settled or an actual duty was assigned imports fell by 50–70 percent

over the first three years. Even in cases that were rejected, imports declined by 15–20 percent.

Casual inspection of import growth rates of major exporters of steel to the United States seems to be consistent with Prusa's overall findings. For example, if one refers to Tables 6.5 and 6.6 which focus on hot- and

Table 6.5 US imports of carbon-flat: hot-rolled sheet and strip (short tons) and AD action

Country	1996	1997	1998	1999	2000	2001
Argentina	2,964	433	367	116,950	118,920	*
Australia	5,906	6,079	76,936	266,567	242,028	no action
Belgium	139,358	40,060	73,066	70,977	53,646	no action
Brazil	244,257	428,836	450,515*	49,809**	163,461*	*
Canada	742,053	573,574	554,435	610,362	459,954	***
China	16,870	6,017	99,941	458,911	485,949	***
Finland	29,201	5,533	45,572	32,907	10,654	no action
France	378,934	317,000	384,478	474,765	365,320	no action
Germany	430,168	271,057	253,642	178,505	130,321	no action
Hungary	16,437	12,222	28,013	31,300	23,133	no action
India	5,287	19,001	101,196	478,439	825,954	***
Indonesia	0	0	31,212	292,605	258,557	***
Italy	211,965	175,334	140,193	57,291	39,054	no action
Japan	244,734	546,033	2,678,815*	80,553***	49,032***	***
Korea	825,713	835,190	769,064	818,013	817,675	no action
Mexico	232,004	269,782	234,887	297,824	335,401	no action
Netherlands	374,538	374,309	451,050	507,474	560,231	**
New Zealand	72,911	58,507	50,596	88,048	64,316	no action
Romania	11,458	71,904	127,253	384,458	410,796	***
Russia	811,061	1,983,197	3,825,073*	15,698**	183,440	no action
Slovakia	22,454	34,925	90,606	75,494	143,663	no action
South Africa	32,131	33,614	80,423	173,066	167,846	**
Sweden	64,018	46,144	28,728	28,723	30,985	no action
Taiwan	1,427	35,811	224,058	470,817	725,108	***
Thailand	0	0	18,050	38,637	233,762	***
Turkey	12,814	39,782	4,612	24,798	49,661	no action
Ukraine	2,490	87,917	127,189	72,907	213,764	***
United Kingdom	111,406	41,042	196,097	36,533	475	no action
Venezuela	99,242	92,907	106,585	131,982	46,126	no action

Notes: Selected countries only. Generally only countries with a three-year (1998–2000) average of 20,000 tons or more were included.

* initiated AD action.

** provisional measures taken (often a duty).

*** definitive action (typically a high duty) taken or still in effect.

Any action taken in December is counted in the following year.

Sources: US International Trade Commission (various years); dates of AD actions are taken from World Trade Organization (various years).

Table 6.6 US imports of carbon-flat: cold-rolled sheet and strip (short tons) and AD action

Country	1996	1997	1998	1999	2000	2001
Argentina	43,908	89,013	93,745	131,769**	92,268***	***
Thailand	2	0	74,045	73,475**	9,740***	*
India	2	75	7	150	18,957	*
Taiwan	3,693	6,048	45,554	94,143*	22,637***	*
Austria	144	7,637	4,228	1,801	7,094	no action
Australia	1,580	10,605	754	564	63,871	*
Ukraine	0	16,179	8,430	0	13,087	no action
United Kingdom	29,401	18,685	11,977	11,198	8,276	no action
Indonesia	18,159	20,401	95,350	19,891*	4,187***	no action
Spain	24,590	24,962	40,881	21,521	15,852	*
Finland	71,979	29,551	15,556	31,284	12,222	no action
Sweden	32,001	35,334	25,253	41,558	26,286	*
Venezuela	14,116	41,575	82,150	58,495**	9,566***	*
Italy	61,403	65,375	31,397	40,004	20,680	no action
New Zealand	22,399	66,088	29,840	27,422	29,409	*
South Africa	84,265	116,433	163,298	85,336**	26,417***	*
Brazil	219,607	123,605	217,640*	312,061***	55,683***	*
Slovakia	57,753	129,547	66,325	45,296*	346***	no action
China	34,535	133,836	133,070	55,655*	46,062***	*
Germany	112,280	141,743	151,069	134,890	159,835	*
Mexico	120,917	160,133	123,511	148,086	206,291	no action
France	179,069	162,186	101,854	162,761	161,186	*
Turkey	56,972	197,402	159,957	85,996*	37,989***	*
Canada	231,488	229,095	222,968	215,888	219,104	no action
Belgium	276,387	271,179	212,894	302,822	255,329	*
Japan	369,265	459,516	634,490	418,541***	250,690***	*
Russia	243,412	631,402	718,596	419,131**	262,737***	*
Korea	282**	1,915**	272,925***	126,629**	247,965***	*
Netherlands	225,594*	237,573**	209,765***	194,566***	186,128***	*

Notes: Selected countries only. Generally only countries with a three-year (1998–2000) average of 20,000 tons or more were included.

* initiated AD action.

** provisional measures taken (often a duty).

*** definitive action (typically a high duty) taken or still in effect. Any action taken in December is counted in the following year.

Sources: US International Trade Commission (various years); dates of AD actions are taken from World Trade Organization (various years).

cold-rolled steel respectively, it appears that the mere initiation of an AD suit (e.g., against Japan and Korea) in the late 1990s had dramatically reduced exports for that country to the United States. Actual imposition of a duty reduced exports even further. That is to say, AD actions are very effective in reducing or in some cases outright eliminating imports from a particular country.

If we look at other countries' import patterns, the same general pattern emerges. That is, following a dramatic rise in the imports of steel from a particular country, AD actions are initiated which typically cause a drop in imports. This initiation is almost always followed by assessment of a duty²³ which brings about even larger declines in exports to the US market. Rarely are "price undertakings" conducted in the wake of an AD initiation for steel products. However, there may be a tendency for exporters to the United States to voluntarily reduce exports in the face of an initiation, thereby implicitly raising the price to avoid further action and thus achieving the same effect. This idea is intimately linked to the idea of the TPM.

Also recall that AD duties are country and firm specific. Therefore AD actions not only result in significant protection, but severe trade diversion as well. This trade diversion was clearly present during the Asian financial crisis and was demonstrated in Table 6.2 of Section 6.2.

If we look again at Tables 6.5 and 6.6, we notice that after a year or two of initiations against (perhaps) the most egregious offenders, more than half of the largest exporters are targeted for AD actions in the steel industry. Having other easy targets often only delays the inevitable for the other major exporters.

It does appear that being a traditional user or member of NAFTA may help enable some countries to stave off AD suits in some cases. However, there appears to be little advantage in being from the East Asian region. AD actions against Japan and Korea (and China and Taiwan to some extent) seem to be quite persistent while for many Western countries (e.g., France, the United Kingdom, and New Zealand) the AD actions are not uniform. This seeming bias could be for one of (at least) three reasons:

- East Asian producers are often the lowest cost producers and thus often appear as the largest offenders and are easy perennial targets.
- The Finger conjecture (Finger, 1993) may hold, in that traditional users are better able to fend off or pre-empt AD actions by the United States.
- Broader political or economic goals may be involved (NAFTA, e.g.).

With respect to the last reason, the NAFTA effect does appear to be real. That is to say, because the United States, Canada, and Mexico are neighbors and have an existing framework to deal with trade issues between the three countries, AD actions between them may be less likely.

6.3.2 Summary of findings

The findings on AD actions by the United States in the steel industry are not surprising. We find that:

- AD duties are typically targeted at countries which experience dramatic export growth to the United States in a short time, often in the order of 50–100 percent increases in one year.
- The initiation of AD actions severely curbs imports to the United States from the targeted country.
- The actual imposition of duties following an AD action results in even larger decreases in imports, often much lower than pre-AD levels.
- There does appear to be some bias against Japanese and Korean exporters to the United States. Because these two countries are often the lowest cost producers and often have sharp increases in exports to the United States, AD actions, while not warranted on economic grounds, are easily proven given the weak legal standards that exist.
- There may be some evidence to suggest that traditional users are less often the target of AD actions, at least for the steel industry.
- There also seems to be some anecdotal evidence that members of NAFTA are less likely to initiate AD actions against each other in steel, despite the large trade volume occurring in this product among these three countries.
- AD actions are on the rise in steel, both by the United States and by new users²⁴ and because of their strong diversionary (and potentially collusion facilitating) effects are a danger to world trade and the health of the world economy.

It will be interesting to see how the AD actions in hot- and cold-rolled steel initiated in October 2001 will develop. The counter sanctions threatened against the United States by Japan and the European Union (and now along with China among other co-complainants) in the spring of 2002 have not yet caused the United States to back down. In addition, after entry to the WTO, China imposed its own AD duties using WTO rules. Thus, China is no longer merely a target of AD actions in world steel trade, but is becoming an increasingly active user of AD measures in its own right. If the Finger (1993) conjecture has any weight, this strategy may allow China to become a more respected member of the world steel "club" which, at least according to some observers, seems bent on collusion.

6.4 Conclusion

The ease under US trade law of complainants establishing that dumping has occurred and the chilling effect this has on trade even without the finding of injury has been documented (Prusa, 1999). The injury test required in establishing that dumped imports are the cause is hardly rigorous. Finally, dubious accounting practices, including exclusion of imports above cost and inconsistent treatment of depreciation in constructed cost, allow the complainants to attain artificially high margins of dumping used in setting AD duties. Once AD duties are in place, it is very difficult to remove them and the Sunset Review reform introduced in Uruguay Round Agreement, while a positive step, is toothless in US AD law. The Byrd Amendment adds insult to injury by awarding the duties paid to the complainant rather than the US Treasury Department. While the focus has been on US AD law, much of the above applies to the European Union as well. Hence, reform of AD in the new Doha Round is likely to attract support from export-oriented economies in East Asia.

It is now well established in the literature that dumping is almost always consistent with competitive firm behavior and is rarely, if ever, of the predation variety. The reasons for this are straightforward. Any firm in an established industry that attempts to take a monopoly position in a foreign market through dumping would not only have to drive out all domestic producers, but would also require protection against new sources of imports and would have to be able to block new entrants in the domestic market. The monopoly could not be sustained without the collaboration of the foreign government, hardly a likely outcome under any foreseeable political economy model. The AD regime itself is anticompetitive as it provides competing foreign and domestic firms with opportunities to collude and fix prices. The outcome of AD definitive measures is to reduce the volume of trade and raise prices, thereby harming consumers in the domestic market.

The erosion of the asymmetry in use of AD between the traditional users (European Union, Canada, Australia, New Zealand, and the United States) and other contracting parties should serve as a caution. New users among the developing and transitional economies are currently filing the bulk of new AD measures. Hence, the traditional users may soon find themselves in a less favorable environment in facing retaliatory investigations. An example of this took place recently when Taiwan's authorities began an investigation of US semiconductor firms after they had filed AD petitions against Taiwanese semiconductor producers.

Ultimately, the findings were that the petitions were without merit and were withdrawn. However, one can easily imagine a prisoner's dilemma where governments impose mutual AD duties.

AD investigations and measures have succeeded in harassing trade, yet they have failed to reverse long-term trends in employment and production in the US steel industry. They might have succeeded in arresting the rise of East Asian steel import penetration in the US steel market, however. The use of safeguards in the case of US steel was an escalation of the trade conflict in steel and put the global trading system at some risk. One possible interpretation of the safeguard action was as a strategic move to force other major producing countries back to bargaining table over the MSA. However, the move has given major US trading partners in East Asia pause as to whether their best policy option would lie in cooperation with the United States in a negotiation that might ultimately impose long-term restrictions on exports as occurred previously in textiles and apparel under the MFA.

Standard trade theory tells us that imposing a tariff results in a net loss for that country so long as any terms of trade gains are negligible. While the United States certainly is a large country and terms of trade gains are present, the likely outcome is still a net loss. The terms of trade gain will only outweigh the deadweight loss when the tariff is small (Krugman and Obstfeld, 2003). The current AD duties are not small, however, averaging 26 percent.

While no calculations were done for the current AD actions, the consumer cost per job saved in the steel industry of the failed import quota scheme, the Steel Revitalization Act, would have been very high, about \$800,000 per job saved according to Hufbauer and Goodrich (2001). Moreover, in this calculation the implicit rise in import prices was only approximately 10 percent (a rise of \$26 per ton). No doubt with AD duties averaging 26 percent, the deadweight loss as well as the net loss to the US economy is much greater. Additionally, Francois and Baughman (2001) found that the Steel Revitalization Act would cost two jobs lost in other steel-using industries (such as autos and heavy machinery) for every job saved in the steel industry. Similar negative downstream effects on steel-using industries are no doubt occurring under the current AD environment.

Finally, the costs to the exporters to the United States such as Japan, Korea, Russia, Brazil, and many others must be considered. The exporters, who may not capture much of the rents from the AD schemes, are also suffering from their diminished sales. In short, the losses to the world are likely to be even greater than the estimates referred to above.

While the current AD actions target a very small portion of overall international trade, the impact on the steel industry is quite significant, as over half the AD measures are in steel products. This tit-for-tat AD escalation, especially in steel imports, may move the industry closer to a more collusive quota scheme. While the current AD duties, and a possible move in the direction of an MSA may benefit some of the steel firms (and to some extent labor in the steel industry), the cost to the overall performance of economies in East Asia, North America, Europe, and the world would be much greater. Thus, meaningful reform of AD laws within the framework of the WTO is paramount and solutions to the steel industry's peculiar problems such as excess capacity and legacy costs must be found quickly.

Appendix: Cointegration as evidence of pricing-to-market

Results of Johansen test for cointegration of Japanese export prices and the yen/US\$ rate

Rank tests	Eigenvalue	Trace Statistic	Max-Eigen Statistic
# of hypothesized cointegrating vectors			
None*	0.16	18.5*	15.04*
At most one	0.04	3.49	3.49
Normalized Cointegrating Vector (under assumption of a rank equal to 1)			
Log ER	Log XR		
1.000	-2.64		

* denotes rejection of the null of no cointegrating vector at a 5% level using Johansen asymptotic critical values.

Notes: Adjusted sample includes 84 monthly, seasonally adjusted observations from 1995:7 until 2002:6. All variables are in logs. A linear deterministic trend was included. Five lags were chosen based on AIC and SC criteria. Log ER is the log of a yen-based index of Japanese export prices of steel. Log XR is the log of the yen/US\$ exchange rate, thus an increase implies a depreciation of the yen.

As one can see from the results above, there appears to be an inverse relationship (when the cointegrating vector is interpreted correctly) between the yen and export prices of steel. That is to say, when the yen appreciates, yen-based export prices fall. Therefore, this provides some tentative evidence for pricing-to-market.

However, some major caveats must be applied. First, the sample, though not quite 100 observations is still quite short in terms of years, and very likely suffers from small-sample bias. Second, correlation of these two variables is not sufficient to prove pricing-to-market, and is only suggestive because this simple estimation ignores other important factors. In particular, this estimation neglects

the fact that as the yen appreciates, part of the fall in Japanese export prices will be due to the fact that imported raw materials will become cheaper. Thus, some of these cost-savings will be passed through to the export market. Although this process is still consistent in explaining some of the fall in export prices during a yen appreciation, this simple approach cannot, strictly speaking, capture pricing-to-market behavior.

Acknowledgments

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Notes

1. Section 201 of the Trade Act of 1974, known as the "Escape Clause," is rarely used. See Cunningham (1998, p. 275).
2. For a useful summary of the history of steel trade disputes and remedies, see Hufbauer and Goodrich (2001).
3. The safeguards, however, are not being applied to steel imports from NAFTA members Canada and Mexico and also exempt a large number of developing countries. No major suppliers from East Asia are exempted although marginal suppliers like Indonesia and the Philippines are exempted.
4. The Multilateral Steel Agreement (MSA) negotiations were launched in 1989 but ultimately collapsed with no agreement in 1997.
5. The figures cited in this paragraph are from Ashworth (1987).
6. Another reason may have been that with the Treasury Department in the lead on anti-dumping decisions, there was some reluctance to introduce definitive measures (Hufbauer, 1999).
7. For discussion, see Baldwin *et al.* (1995).
8. Baldwin *et al.* (1995) provide an excellent discussion of the adjustment of the US steel industry in response to changes in labor-management relations, technological change, and increasing import competition during recent decades. Hufbauer and Goodrich (2001) provide a succinct summary of the protective measures taken over the course of three decades leading up to the Section 201 safeguards of 2002 and also comment on recent trends in productivity and US steel demand. Brook (1998) provides an interesting discussion of the political economy issues involved in US steel trade disputes. These sources provide references to the broader literature on the US steel industry.
9. See Baldwin *et al.* (1995, p. 165).
10. Frank (1999, p. 221) points out that the "Buy American" campaign gained momentum after 1967, especially between 1978 and 1981, and that 35 states had "Buy American" laws in 1990. The steel industry was behind this effort. For example, in 1981, 18 states passed such laws and eight of these mandated only the purchase of US-produced steel.
11. Hufbauer and Wada (1999) report that the cost of producing a ton of hot-rolled steel is \$315 in a mini-mill compared with \$350 in an integrated mill. With the growth of the efficient mini-mill sector and productivity gains in

- the integrated mills the manhours required to produce a ton of steel declined from nine to four between 1980 and 1998 (Lindsey *et al.*, 1999, p. 7).
12. James and Movshuk (2003) provide the estimates of import penetration and tests for significance of trend.
 13. These data are from the homepage of the USITC (<http://dataweb.usitc.gov/>).
 14. Trebilcock and Howse (1999, p. 227); they provide a detailed discussion of the controversies surrounding Article XIX.
 15. Article XIX is not the only escape clause in the GATT. Articles XII and XVIII (b) allow developing countries to restrict or control imports for reasons of balance-of-payments considerations.
 16. Compensation, while limiting the inappropriate use of Article XIX, may also reduce the chance that it will be used at all. Hence, it is unsurprising that AD, CVD and export restraint agreements have been more popular. The latter methods also provide for selectivity in application of the protective measure.
 17. When Japan acceded to the GATT in 1955, some contracting parties wished to invoke selective safeguards only against "injurious" exports from Japan rather than to put in place generally protective measures (Trebilcock and Howse, 1999, p. 234).
 18. The Sunset Review process under US law is rigged so that the presumption is that dumping will recur and, hence, it is likely most definitive measures will be kept in place indefinitely (Moore, 1999).
 19. Data are from the US International Trade Commission (various years).
 20. These series are indices that have been scaled to 100 in January 1995. From this we can observe changes in levels of each series, but actual prices (unit values) may be higher or lower and cannot be determined from these figures. Thus, for example, per unit prices for Japanese exports may have been higher or lower than US import unit prices before and/or after the crisis. Because of varying (typically higher) quality of Japanese steel, simple unit price comparisons are not always as useful as relative price movements such as these.
 21. For a very simple model, see Krugman and Obstfeld (2003); for a more sophisticated model, see, for example Brander (1981).
 22. Loosely speaking, cointegration implies long-run co-movements of two or more series. Such analysis rules out possible spurious relationships which frequently occur with trending, or non-stationary data such as time series. See Maddala and Kim (1998) for the theory of cointegration and a comprehensive survey of the literature over the past 20 years as well as current advances.
 23. These duties are relatively large. For the United States, steel AD duties averaged 26 percent in 2002 by the authors' calculation, with some duties exceeding 200 percent.
 24. See World Trade Organization (various years) for country- and product-specific examples.

References

- Ashworth, William (1987), *A Short History of the International Economy Since 1850*, Fourth Edition, London and New York: Longman.
- Baldwin, Robert E., Tain-Jy Chen, and Douglas Nelson (1995), *Political Economy of U.S.-Taiwan Trade*, Ann Arbor: University of Michigan Press.

- Bank of Japan (various years), Data downloaded from the Bank of Japan's home page (www.boj.or.jp), 2002–04.
- Brander, James (1981), "Intraindustry Trade in Identical Commodities," *Journal of International Economics*, 11: 1–14.
- Brook, Douglas A. (1998), "Steel: Trade Policy in a Changed Environment," in A. V. Deardorff and R. M. Stern, eds, *Constituent Interests and U.S. Trade Policies*, Ann Arbor: University of Michigan Press.
- Burnham, Walter D. (1981), "The System of 1896: An Analysis," in P. Kleppner et al., eds, *The Evolution of American Electoral Systems*, Westport: Greenwood Press.
- Chacholiades, Miltiades (1990), *International Economics*, New York: McGraw Hill.
- Cunningham, Richard O. (1998), "Trade Law and Trade Policy: The Advocate's Perspective," in A. V. Deardorff and R. M. Stern, eds, *Constituent Interests and U.S. Trade Policies*, Ann Arbor: University of Michigan Press.
- Finger, Michael J., ed. (1993), *Antidumping: How it Works and Who Gets Hurt*, Ann Arbor: University of Michigan Press.
- Francois, Joseph F. and Laura Baughman (2001), "Costs to American Consuming Industries of Steel Quotas and Taxes," Washington: The Consuming Industries Trade Action Coalition Foundation, June (http://www.citac.trade.org/latest/citac_steel_quotas_and_taxes_04_30_01.pdf).
- Frank, Dana (1999), *Buy American: The Untold Story of Economic Nationalism*, Boston: Beacon Press.
- Hufbauer, Gary Clyde (1999), "Anti-Dumping: A Look at U.S. Experience, Lessons for Indonesia," mimeo, Washington, DC: Institute for International Economics.
- Hufbauer, Gary Clyde and Ben Goodrich (2001), "Steel: Big Problems, Better Solutions," Policy Briefs, Number PB01-9, Washington, DC: Institute of International Economics, July (<http://www.iie.com/publications/pb/pb01-9.htm>).
- Hufbauer, Gary Clyde and Erika Wada (1999), "Steel Quotas: A Rigged Lottery," Policy Briefs, Number PB99-5, Washington, DC: Institute of International Economics, June (<http://www.iie.com/publications/pb/pb99-5.htm>).
- International Monetary Fund (2003), *International Financial Statistics*, November CD-ROM. Washington, DC: International Monetary Fund.
- International Monetary Fund (2004), *World Economic Outlook*, April. Washington, DC: International Monetary Fund.
- James, William E. and Oleksandr Movshuk (2003), "Comparative Advantage in Japan, Korea, and Taiwan between 1980 and 1999: Testing for Convergence and Implications for Closer Economic Relations," *Developing Economies*, 41: 278–308.
- Japan Tariff Association (various years), JTRADE Database accessed from the Japan Tariff Association's home page (www.kanzei.or.jp), 2002–04.
- Klitgaard, Thomas and Karen Schiele (1998), "Free versus Fair Trade: The Dumping Issue," *Current Issues in Economics and Finance*, 4(8), August, New York: Federal Reserve Bank of New York.
- Krugman, Paul R. and Maurice Obstfeld (2003), *International Economics: Theory and Policy*, Sixth Edition, New York: Addison-Wesley.
- Lindsey, Brink, Daniel T. Griswold, and Aaron Lukas (1999), "The Steel 'Crisis' and the Costs of Protectionism," Trade Briefing Paper No. 4, Washington, DC: The Cato Institute, April.
- Maddala, G. S. and In-Moo Kim (1998), *Unit Roots, Cointegration, and Structural Change*, Cambridge, UK: Cambridge University Press.
- Marston, Richard C. (1990), "Pricing to Market in Japanese Manufacturing," *Journal of International Economics*, 29: 217–36.
- Miranda, Jorge, Raul A. Torres, and Mario Ruiz (1998), "The International Use of Anti-Dumping," *Journal of World Trade*, 32(5): 5–71.
- Moore, Michael O. (1999), "Anti-Dumping Reform in the United States: A Faded Sunset," *Journal of World Trade*, 33(4): 1–18.
- Prusa, Thomas J. (1999), "On the Spread and Impact of Antidumping," National Bureau of Economic Research Working Paper No. 7404.
- Sasaki, Yuri Nagataki (2002), "Pricing-to-Market Behavior: Japanese Exports to the US, Asia, and the EU," *Review of International Economics*, 10: 140–50.
- Statistics Canada (various years), *World Trade Analyzer*, 2001 and 2003 CD-ROMs. Ottawa: Statistics Canada.
- Trebilcock, Michael J. and Robert Howse (1999), *The Regulation of International Trade*, Second Edition, London: Routledge.
- United Nations Industrial Development Organization (various years), *Industrial Statistics Database, 3-Digit Level of ISIC Code*, Vienna: UNIDO.
- U.S. Bureau of Labor Statistics (various years), Price data downloaded from the BLS home page (www.bls.gov), 2002–04. Washington, DC: Bureau of Labor Statistics.
- U.S. International Trade Commission (various years), Articles and data downloaded from the USITC home page (<http://www.usitc.gov>), 2002–04. Washington, DC: International Trade Commission.
- World Trade Organization (various years), Articles and data downloaded from the World Trade Organization home page (<http://www.wto.org>), 2002–04.