

IMPORT RESTRICTIONS ON STEEL:
DOUBTFUL BENEFITS, HIGH COSTS

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Executive Summary

The US steel industry is no stranger to trade protection. On and off, for the past 33 years, steel imports have been subject to trade restraints in the name of averting layoffs and restoring the industry to financial health. The multitude of steel import restraints imposed between 1968 and 2001 have already cost domestic steel users about \$120 billion (measured in dollars of year 2000 purchasing power). These same trade restraints have cost foreign steel producers another \$86 billion in lost shipments to the United States (again, 2000 dollars).

If trade protection could foster industrial prosperity, the US steel industry would be doing very well. But trade protection is not the answer for problems that originate elsewhere – high-cost capacity, legacy costs, and rigid work rules. Yet once again, the industry is seeking to limit imports as a solution to its domestic problems.

Fresh import restrictions would inflict a lot of pain on domestic steel users and foreign steel producers relative to the pleasure they confer on the domestic steel industry. The severe import restraints advocated by Commissioners Bragg and Devaney (the “Strong Remedy”) would cost US steel users \$12 billion over four years; additionally, they would cost foreign steel exporters \$23 billion of lost shipments. In other words, the total cost of the Strong Remedy to domestic users and foreign suppliers would amount to \$34 billion over four years.

By comparison, the “Joint Remedy” advocated by Commissioners Hillman, Coplan and Miller would entail total costs of \$15 billion over four years. The “Quota Remedy”, recommended by Commissioner Okun, would cost \$9.5 billion over four years. The Joint Remedy and the Quota Remedy are cheap only by comparison with the Strong Remedy. At most, the value of domestic steel production would rise by half the cost imposed on domestic users and foreign suppliers. The cost of import restraints to domestic steel users, per job saved in the steel industry, would run at about \$500,000 per job per year. The total number of jobs saved in the steel industry would be less than 10,000. Protection could cost many times this number of US jobs in downstream user industries. Finally, if the United States imposes strong Section 201 remedies, foreign countries will be less willing to cooperate with the United States in multilateral trade negotiations.

Introduction

The US steel industry is no stranger to trade protection. On and off, for the past 33 years, steel imports have been subject to trade restraints in the name of averting layoffs and restoring the industry to financial health. To recap the trade saga:

- In 1968, US steel producers filed a series of countervailing duty cases against subsidized European steel makers. These cases led to “voluntary restraint agreements” that were terminated when the global steel market recovered in 1974.²
- In 1977, US steel producers filed a series of dumping cases primarily aimed at Japanese steel firms. These cases led to a system of minimum reference prices for steel imports, known as the “trigger price mechanism” (TPM). The TPM system was soon extended to European steel.
- In 1974 and 1979, both at the launch and ratification of the Tokyo Round Multilateral Trade Agreement, the US antidumping law was amended (at the insistence of the steel industry), making it easier for domestic producers to prevail in antidumping cases.
- In 1982, dissatisfied with the workings of the TPM system, US steel producers filed a large number of antidumping and countervailing duty cases. These were resolved by new voluntary restraint agreements, which lasted until 1992.

- In 1984, the Reagan Administration announced a program to limit the growing volume of unfairly traded steel imports entering the United States to 18.5 percent of US consumption. The program involved the negotiation of voluntary restraint agreements with major steel suppliers, including Japan, Brazil, South Korea, the European Community, Australia, South Africa, etc.
- In the mid-1980s, trade remedy cases were filed against “new” exporters, such as Brazil and Korea. Most of these cases resulted in high antidumping and countervailing duty penalties.
- In 1989, the Bush Administration announced a Steel Trade Liberalization Program, which involved a 2 ½ year extension of voluntary restraint arrangements on imported steel. In addition, the United States launched negotiations to create a Multilateral Steel Agreement, designed to abolish subsidies. The negotiations failed, and were ultimately abandoned in 1997. The major sticking point was demands by foreign governments that the United States agree to refrain from antidumping and countervailing duty actions as part of a MSA.
- In 1992, when the voluntary restraint agreements dating from 1982 expired, a new set of antidumping and countervailing duty cases were filed by the US industry. Many of the resulting penalty duties remain in effect today.
- In March 1999, the House of Representatives passed H.R. 975, Congressman Peter Visclosky’s (D-Ind) steel quota bill, 289 to 141. After spirited debate,³ the Senate defeated the bill in a procedural vote.
- In the late 1990s, the steel industry filed numerous antidumping and countervailing duty cases. As of December 2001, about 159 steel cases had either

resulted in antidumping or countervailing duty orders, or were pending investigation (covering nearly 80 percent of steel imports).

- In 1999, a quantitative suspension agreement was negotiated with Russia to resolve pending antidumping investigations.
- In July 2001, President Bush asked the International Trade Commission to conduct a Section 201 investigation, to determine whether steel imports are a “substantial cause of serious injury” to the domestic industry.⁴ In October 2001, the ITC declared that imports of 16 steel products were causing injury. These 16 products totaled 27 million tons of imports in 2000, valued at \$10.7 billion.
- In December 2001, individual ITC Commissioners recommended differing menus of trade restraints. Under the statute, President Bush may pick and choose among the ITC recommendations, fashion his own remedies -- including measures besides trade restraints, or take no action.

In Table 1, we estimate the cost to US steel users and foreign steel suppliers due to US import restrictions between 1968 and 2001. In constant 2000 dollars, steel protection has conservatively cost US steel users \$120 billion, and it has deprived foreign steel suppliers of shipments worth \$86 billion. These estimates do not include the costs of post-1998 AD duties or the budget costs associated with loan guarantees and special tax breaks for steel producers.⁵

No one questions the obvious fact that domestic steel firms – particularly integrated steel mills – are in dire straits.⁶ But in light of the long history of steel import restraints, it is

time to ask whether a new dose of protection will restore the industry's health where previous doses of the same medicine have conspicuously failed. We think the answer is a resounding "no". In this Report, we first analyze the possible benefits and certain costs entailed by the ITC's menu of import restrictions. We then explain why other analysts reach somewhat different conclusions on the price and quantity effects of import restrictions.

Do alternative remedies exist for the domestic steel industry – remedies besides import restraints? The answer is a resounding "yes". Alternative remedies involve a mixture of four elements: (1) domestic consolidation; (2) government assistance for "legacy costs" (pension and health benefit promises to retired steel workers) for closed, bankrupt steel facilities; (3) wage insurance and other forms of adjustment assistance for displaced steel workers; and (4) steps by foreign steel producers to close their own inefficient high-cost capacity and address unfair subsidies and trade-distorting practices. These alternatives have been spelled out elsewhere, and we do not repeat them in this Report.⁷

ITC Import Restraint Recommendations

On December 7, 2001, the Commissioners previewed their recommended trade restraints. Trade restraints were recommended for 16 groups of steel products, taken individually. There was little consensus among the recommendations. Three Commissioners (Hillman, Koplan, and Miller, labeled the "Joint Remedy") recommended a similar remedy for 15 product groups – generally a 15 to 20 percent ad valorem tariff. However, for an important product group, imported steel slab, the Joint Remedy called for a tariff rate

quota (TRQ), with a high and growing “in-quota” quantity that could be imported free of any Section 201 tariff. Imports above the quota (“out-of-quota” imports) would pay a 20 percent tariff in the first year of Section 201 restraints (2002), declining to 11 percent in the fourth year (2005). Some domestic steel mills (so-called “rollermills”) use imported slab to manufacture finished products. Since the initial “in-quota” quantity (7 million tons) is well above the current import level (about 5 million tons), and since the in-quota quantity under the Joint Remedy grows to 8.5 million tons in the fourth year, it seems unlikely that the 20 percent out-of-quota tariff for slab would bite during the period of Section 201 restraints.⁸

By contrast with the Joint Remedy, Commissioners Bragg and Devaney (labeled “Strong Remedy”) recommended much higher tariffs, generally about 40 percent. They included imported slab in this recommendation, with a tariff of 40 percent. For a few products, Commissioner Devaney recommended either a TRQ or a straight quota.

Finally, Commissioner Okun (labeled “Quota Remedy”) generally recommended straight quotas. However, many of the quotas are set at levels above year 2000 imports. Since imports of the affected products dropped sharply in 2001, and since steel consumption is growing very slowly, it seems likely that several of the quotas recommended by Okun would have no effect during the period of Section 201 restraints. Importantly, Commissioner Okun subscribed to the Joint Remedy for imported slab, a TRQ with an allowance for high in-quota imports.

Modeling the impact of trade restrictions. We apply a model of steel production and imports to assess the impact of the recommended trade restrictions on nine important magnitudes: (1) the quantity of imported steel; (2) the average price of imported steel; (3) the quantity of domestic production; (4) the average price of domestic steel; (5) the tariff revenue generated, if any; (6) the “quota rents”, if any, created by a binding tariff and distributed to the holders of in-quota import rights; (7) the cost to domestic steel users; (8) the loss of revenues for foreign steel producers; (9) the additional revenues for domestic steel producers. Interested readers are referred to Appendix A for our detailed calculations. Here we focus on the costs and benefits of trade protection, namely, the last three magnitudes listed.

Our model is a computable partial equilibrium (CPE) model. The structure of our CPE model is described in detail elsewhere.⁹ A CPE model just looks at the industry in question. The CPE model does not capture in detail the adverse impact of steel import restraints on steel-using industries (autos, trucks, heavy equipment, chemicals, construction, etc.). Later in this Report we describe the results from a computable general equilibrium (CGE) model developed by other authors. While our CPE model tells how much cost is inflicted on steel users overall by trade remedies, the CGE model goes a step further and translates these higher user costs into lost profits and jobs in individual user industries.

Table 2 gives the key parameters in our CPE model. These parameters describe the price elasticity of domestic steel supply and demand, the cross-price elasticity of demand for

domestic steel as a function of the price of imported steel, and the cross-price elasticity of demand for imported steel as a function of the price of domestic steel. Underlying these elasticity parameters is a very important parameter, the so-called elasticity of substitution between domestic and imported steel. The elasticity of substitution is defined as the percentage change in the ratio of the quantity demanded of imported steel to the quantity demanded of domestic steel, for each one percent change in the price of imported steel to the price of domestic steel. This definition is a mouthful, but in simple terms a high elasticity of substitution means that domestic steel is a ready substitute for imported steel, whereas a low elasticity of substitution means that the two types of steel are not readily interchangeable. Based on our search of the literature,¹⁰ the highest plausible value for the elasticity of substitution is about 3.0. This means that an increase of one percent in the landed price of imported steel (including the effect of tariff and quota restrictions) will change the ratio between domestic and imported steel consumption by three percent. Much of the changed ratio reflects a drop in the quantity of imported steel; a small part of the changed ratio reflects a rise in the quantity produced of domestic steel.

Commentators often assume that if steel imports are curtailed by one million tons, domestic steel production will rise by one million tons. Similarly, they assume that if the landed price of imported steel is forced up by 20 percent by a tariff or quota, the price of domestic steel will also rise by 20 percent. In other words, they assume perfect substitution – implicitly they regard tons of steel like 10-year Treasury notes, each one identical to the next. In practice, this assumption is badly wrong. Tons of steel, even within a narrow category such as carbon and alloy steel plate, differ greatly – in terms of

quality specifications, delivery times, and warranties. As a consequence, domestic and imported steel are not perfect substitutes. In general terms, when steel imports are curtailed by one million tons, domestic steel production rises by only 600,000 tons. Moreover, when the landed price of steel imports rises by 20 percent because of a tariff or quota, the domestic price of domestic steel only rises by 2 percent.¹¹

These hard realities of the marketplace sharply limit how much assistance can be provided to the domestic steel industry through trade protection. Putting the matter another way, import restraints inflict a lot of pain on foreign steel producers and domestic steel users relative to the pleasure they confer on the domestic steel industry.

To model the impact of recommended ITC trade restrictions by product group, we first made assumptions about the future course of steel demand. To keep the calculations simple, we assumed that US steel production, imports and consumption in the absence of trade restrictions during the Section 201 relief period (four years, approximately January 2002 to December 2005) would remain at their 2000 levels and that Canada and Mexico were included in all remedies. Imports and production are sharply depressed in 2001 by comparison with their 2000 levels, but we assume a return to the more normal conditions of 2000, and very little growth in steel consumption after that.¹²

Based on this assumption about market conditions and our CPE model, Table 3 summarizes the costs and benefits of the import recommendations submitted to President Bush by each of the International Trade Commissioners. Table 3 reflects the detailed

calculations by product group that appear in Appendix A.¹³ Three features stand out in the cost-and-benefit ledger of the remedy recommendations offered by the various Commissioners: high dollar costs, small impact on domestic prices, and high cost-to-benefit ratios.

First, high dollar costs. The import restraints recommended by Commissioners Bragg and Devaney (the “Strong Remedy”) are much more severe than those recommended by the others. The Strong Remedy would cost US steel users \$11.9 billion over four years and cost foreign exporters \$22.6 billion. In other words, the Strong Remedy entails total costs (domestic users plus foreign suppliers) over four years of about \$34 billion. The other recommendations seem cheap, but only by comparison with the Strong Remedy. The Joint Remedy, recommended by Commissioners Hillman, Koplan, and Miller, entails total costs over four years of about \$15 billion. The Quota Remedy, recommended by Commissioner Okun, entails total costs over four years of \$9.5 billion. While it might be tempting to ignore the revenue loss to foreign suppliers in counting costs, steel protection is likely to trigger repercussions that could cloud US commercial and political diplomacy, and adversely affect the pocketbooks of US consumers.

Second, small impact on domestic steel prices. None of the remedy recommendations substantially increases the average price of domestic steel.¹⁴ Even the Strong Remedy fails to make an appreciable difference in domestic steel prices. At most, tariffs of this extraordinary magnitude might raise average domestic prices by 4 percent.¹⁵ In the past year alone, steel prices have fallen 17 percent due to the slowing economy.¹⁶ Elsewhere,

we and others have urged consolidation of the domestic steel industry. We calculate that domestic consolidation would have a much more favorable effect on domestic steel prices than trade protection.¹⁷

Third, high cost-to-benefit ratios. The cost side of the cost-to-benefit ratio includes both costs to domestic steel users and the revenue loss to foreign suppliers. The benefit side reflects the revenue gain to domestic producers. In all cases, the costs outweigh the benefits. For the Strong Remedy, the cost-to-benefit ratio is 1.6. For the Joint Remedy and the Quota Remedy, the cost-to-benefit ratios are 2.0 and 2.2 respectively.¹⁸ These ratios are saying that \$1.6 billion to \$2.2 billion of annual pain will be inflicted on domestic steel users and foreign suppliers for every \$1.0 billion of annual pleasure conferred on the domestic steel industry. By any measure of national economic interest, these are unacceptably high pain-to-pleasure ratios.

As a side note, the steel industry itself is a big user of steel, processing unfinished forms (e.g. slab and plate) into finished forms (e.g. tubes and wire). We do not try to estimate how much of higher “steel user” costs that are incurred by the steel industry itself are in turn passed on to other industries, and how much are absorbed by the steel industry. Hypothetically, however, if half of the steel user costs recommended by Bragg and Devaney are absorbed by the steel industry, the net revenue gain to the steel industry drops from \$21 billion to \$15 billion and the cost-to-benefit ratio would rise to 2.5.

Our model conservatively assumes that the value of domestic steel consumption (imports plus domestic production) remains about the same after steel imports are restrained.

Implicitly we are assuming that downstream users of steel would not be adversely affected by domestic consumer resistance to higher product prices (for example, higher auto prices) or by foreign competition in those product lines. However, the calculations made by a computable general equilibrium model (discussed in the final section) suggests that downstream steel users would be hard hit and would likely reduce their steel consumption in response to Section 201 remedies.

Trade Negotiations: the Doha Work Programme and the FTAA. With tremendous effort and considerable skill, Ambassador Zoellick and his colleagues launched a new round of multilateral trade talks at Doha, Qatar in November 2001. Within a month, the House of Representatives narrowly voted (215-214) to authorize Trade Promotion Authority.

Doha negotiations will probably start in late spring 2002, assuming the Senate enacts and President Bush signs the TPA bill. Meanwhile, in accordance with an agreement reached at President Bush's insistence at the Quebec Summit in February 2001, market access negotiations in the Free Trade Agreement of the Americas are scheduled to begin in May 2002. Taken together, the Doha Work Programme and the FTAA market access talks are the first major negotiations since the Uruguay Round was concluded in 1994.

How does the Section 201 steel case affect these freshly launched trade negotiations?

While it is hard to disentangle the impact of a major trade dispute on multilateral trade negotiations, the proposed steel import restraints cannot be viewed as a constructive step.

Here's what the European Union had to say when the ITC announced its recommended trade remedies:

The measures recommended by the ITC today are totally unjustified. If this approach is accepted and implemented, it would constitute a violation of the WTO rules. The EU would immediately launch a complaint and is confident that this would lead to a rapid condemnation of the US measures. The US has already been condemned a number of times by the WTO as its anti-dumping, anti-subsidy and safeguard procedures do not conform to its international commitments. This is another case where the ITC has found injury despite the absence of any recent surge in imports. US legislation gives the US President a wide margin of maneuver to adopt any action which he considers 'appropriate and feasible' in response to an ITC recommendation. The EU calls on the President to choose measures, which favor market adjustment and restructuring not market closure.¹⁹

Under the WTO Safeguards Agreement, foreign countries would be entitled to "compensation" after 30 days if Section 201 remedies are imposed on products where the absolute volume of imports is declining ("compensation" means lower US tariffs on comparable imports of other products). In almost all cases where the ITC recommended remedies, the volume of imports declined in the first six months of 2001 relative to the first six months of 2000. In three cases, the volume of imports declined in 2000 relative to 1998. If President Bush applies trade restrictions on these products, the European Union and other countries would be entitled to almost immediate compensation. If compensation is not forthcoming, these countries are permitted to retaliate against sensitive US products. Very likely they would retaliate against agriculture products or against products from sensitive states, such as steel-producing states. For example, if the recommendations made by Commissioner Bragg were adopted, foreign countries could be entitled to almost \$9 billion in compensation or retaliation over four years, using the 1998 to 2000 timeframe.²⁰ US steel import restrictions could also complicate efforts to resolve an unrelated dispute over the Foreign Sales Corporation (FSC) tax provision.

For its part, Brazil has vigorously denounced US antidumping duties, countervailing duties, and the ITC's recommendations for Section 201 trade restraints.²¹ Among Brazil's long list of US barriers to Brazilian exports, steel ranks very high. Brazil, of course, is the dominant Latin America player in FTAA talks, and progress will be difficult without Brazil's concurrence.

Japan and China also criticized the ITC recommendations. The Japanese Minister of Economy, Trade and Industry, Takeo Hiranuma, characterized the recommendations as "deeply regrettable".²² The Chinese Ministry of Foreign Trade stated that China "is unwilling to see normal international trade disturbed by improper trade policies and measures."²³ It is worth noting that China recently retaliated against Japanese agricultural safeguards on imported leeks and garlic by imposing mirror restrictions on Japanese autos and cellular phones. While copy-cat restrictions imposed in retaliation for US steel barriers could be challenged in the WTO as a violation of the Safeguards Agreement, such a dispute could take several years to resolve.

Even discounting the colorful hyperbole that often peppers the public statements of trade ministers, these are strong warnings. It seems likely that most of the trade restraints recommended by the ITC Commissioners, if adopted by President Bush, will make Ambassador Zoellick's life far more difficult as he pursues negotiations in the WTO and FTAA.

Comparing Models

In this final section, we compare models of steel trade and production, and explain why some of the calculations differ from our own. Most of the models are computable partial equilibrium (CPE) models, with a structure similar to ours. Since the models *should* agree on base year (2000) quantities for imports, production and employment, the core reason for different calculations *should be* different parameter values.

Table 4 illustrates how changing the parameters in the CPE model affects the estimates for one important product group, hot-rolled flat products. The first line summarizes our predictions of the effects of the Strong Remedy for hot-rolled flat products in 2002 using the elasticities from Table 2. According to our model, imposing a 40 percent tariff would raise the domestic price of hot-rolled flat products by 1.7 percent and increase the domestic quantity of hot-rolled flat products by 5 percent. Consequently, domestic revenue would rise 6.7 percent, which is about as big a revenue gain any of the ITC remedies would generate (in our model) for the 16 affected steel product groups. The quantity of hot-rolled flat product imports would decrease by about 60 percent.

Thomas Prusa, an economist at the University of Rutgers, consulting on behalf of Japanese exporters, calculated the effect of a 50 percent tariff on hot-rolled flat product imports using slightly different elasticity parameters.²⁴ For the sake of comparison, we ran our model using a 50 percent tariff and the same elasticities reported in Table 2. The elasticity of domestic supply affects the size of the induced domestic price increase. Hence, Prusa's decision to use a higher elasticity of supply (4.5 versus our parameter of

3.0) results in his lower estimate for the induced domestic price increase (1.4 percent) versus our estimate (2.0 percent). By choosing a higher elasticity of substitution and a higher elasticity of demand, Prusa's prediction for the increase in domestic output (6.4 percent) is slightly larger than our estimate (6.0 percent). However, Prusa's prediction for the increase in domestic revenue (7.9 percent) is similar to ours (8.2 percent), because the differences in the estimated price and quantity effects offset one another. Prusa's calculation of the decline in imports induced by a 50 percent tariff is virtually the same as ours, a huge 67 percent.

The Thompson Coburn estimates on behalf of Ispat Inland, Inc., a major steel producer, assume a 35 percent tariff on imports of hot-rolled flat products and use elasticity parameters that differ from ours.²⁵ To facilitate comparison, we ran our model using a 35 percent tariff and the elasticities reported in Table 2. However, Thompson Coburn assumes that the share of imports in US hot-rolled flat product consumption is double the share reported by the ITC. This inexplicable difference amplifies the effects of a 35 percent tariff remedy because "more" steel is subjected to trade restraints. The elasticities used by Thompson Coburn are similar to those used by Prusa, but by altering the assumed share of imported hot-rolled flat products, Thompson Coburn predicts larger effects from a 35 percent tariff than Prusa predicts from a 50 percent tariff. The Thompson Coburn calculation of the decline in imports is somewhat higher than ours, 61 percent versus 56 percent, but both numbers are huge.

In contrast to a computable *partial* equilibrium (CPE) model that estimates the costs and benefits in one sector, a computable *general* equilibrium (CGE) model estimates the costs and benefits across all sectors of the US economy. For example, an increase in the price of domestic and imported steel will increase the production cost for finished products that use steel like cars, washing machines, and houses. Part of this increase in production cost will be passed on to consumers, which causes a decline in the demand for those products and consequently, a loss of jobs in downstream sectors. A CGE model is the only way to estimate the ripple effects of Section 201 remedies for steel.

Like CPE models, CGE models are sensitive to the assumed elasticity parameters. Furthermore, in order to use a CGE model, elasticity parameters for every sector must be specified, and if any elasticity is wrong, the estimates will be inaccurate. Generally, if the elasticities used are too high, the benefits to the steel producers will be exaggerated but the downstream costs will be similarly amplified. While CGE estimates should be viewed as ballpark predictions, they are highly suggestive of the ratio between downstream user costs and steel producer benefits.

The only CGE model of the impact of Section 201 remedies – a study by Francois and Baughman -- predicts that domestic steel prices will increase by only 0.4 percent and domestic steel output will increase by 5.9 percent as a result of a 20.7 percent average tariff.²⁶ These small increases are predicted to save about 8,900 steel jobs but cost the United States \$450,000 per job from higher prices and forgone consumption of finished products that use steel.²⁷ More telling, according to this CGE model, downstream

industries would lose 74,500 jobs. The bottom line is that 8 jobs would be lost in downstream sectors for every steel-producing job saved.

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Endnotes

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² Inflation concerns and a famous lawsuit, *Consumers Union v. Kissinger* (506 F.2nd 136) 1974, also contributed to the termination of the voluntary restraint agreements.

³ See Hufbauer and Wada (1999).

⁴ In a Section 201 investigation, it does not matter whether imported steel is fairly or unfairly traded. The only question is whether imported steel is the “substantial cause” (more important than any other cause) of “serious injury” to the domestic industry.

⁵ Another source estimates the cumulative cost of loan guarantees and tax breaks at \$22 billion. Barringer and Pierce (2000 p.3).

⁶ Between 1997 and 2001, the industry laid off 21,000 workers. During the first half of 2001, compared to the first half of 2000, U.S. steel consumption dropped 17 percent. Since November 2000, some 21 steel firms have entered into bankruptcy proceedings.

⁷ See Hufbauer and Goodrich (2001) and Hufbauer and Goodrich (2002).

⁸ Domestic minimills joined the Section 201 case in hopes that stiff restrictions would be placed on imported steel slab – thereby hobbling their domestic rollermill competitors. The Joint Remedy TRQ recommendation is a big disappointment to the minimills.

⁹ See Hufbauer and Elliott (1994), pp. 31-42.

¹⁰ See Irwin (2000), Reinert and Roland-Holst (1992), and Shiells, Stern, and Deardorff (1986).

¹¹ See Hufbauer and Goodrich (2002), table 5. Obviously the price impact differs between products. Moreover, if the elasticity of total demand (imported plus domestic steel) is smaller than the value we have assumed, 1.0 (absolute value), the impact on domestic prices of steel import restraints will be greater. However, even if the total demand elasticity is only 0.5 (absolute value), domestic prices would still rise less than 4 percent from a 20 percent tariff on imported steel.

¹² Apart from cyclical fluctuations, both U.S. steel consumption and world steel consumption have shown little growth over the past decade. Between 1989 and 1999, when world GDP grew 30 percent in real terms, world steel consumption only increased from 786 million tons to 789 million tons. Hufbauer and Goodrich (2001), p. 2.

¹³ The calculations in Appendix A are based on the preliminary version of recommendations released by the ITC on December 7, 2001.

¹⁴ See Tables A1-A4 in Appendix A.

¹⁵ Our CPE model assumes total demand elasticity of 1.0 (absolute value). This could be too high. If the total demand elasticity is as low as 0.5 (absolute value), the domestic price impacts shown in Tables A1-A4 would at most be doubled.

¹⁶ Data is from AISI (2001), although AISI insists (wrongly in our opinion) that the decline in prices is driven by imports.

¹⁷ See Hufbauer and Goodrich (2002) and also Prusa (2001).

¹⁸ The reason the overall cost-to-benefit *ratio* is lower for the Strong Remedy is that the Strong Remedy (unlike the Joint Remedy and the Quota Remedy) confers very substantial benefits on domestic producers of slab products. The associated cost to domestic steel users and foreign steel exporters is high in absolute terms, but the *ratio* of

costs-to-benefits for slabs is relatively low, which drags down the overall cost-to-benefit ratio for the Strong Remedy. See Appendix Tables A.6 through A.8.

¹⁹ EU (2001). In a subsequent statement, EU Trade Commissioner Pascal Lamy characterized the US steel policy as a policy best summarized as “stop me before I kill again” – citing the ITC recommendations on the eve of another round of OECD negotiations (Inside U.S. Trade 2001).

²⁰ The WTO Safeguards Agreement is not entirely clear on the appropriate timeframe. Article 8, Paragraph 2 states that if no agreement is reached on compensation, affected parties are permitted to retaliate of their own volition. The United States would then have to bring a case to the WTO and justify its finding that there has been an absolute increase in imports in order to stop the retaliation.

²¹ Brazilian Embassy (2001).

²² Inside U.S. Trade (2001)

²³ Financial Times (2001)

²⁴ See Prusa (2001). Prusa’s elasticity estimates are taken from the ITC’s recommendations as listed in Messer, Na, and Cassise (2001).

²⁵ See Thompson Coburn (2001). Prusa (2001) criticizes Thompson and Coburn for using the wrong value of import share. Also, Thompson Coburn’s elasticity parameters, while apparently based on Messer, Na, and Cassise (2001), are not identical.

²⁶ See Baughman and Francois (2001).

²⁷ Hufbauer and Goodrich (2002) found that the Devaney/Bragg remedy would save 8,770 jobs.