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FEDERAL TRADE COMMISSION[1]

In 1984, Morkre and I estimated the costs to the economy and consumers of the voluntary restraint agreements (VRAs) on steel that had recently been announced by the US.[2] We estimated that the VRAs would be expected to impose significant costs on the US economy and consumers that substantially outweigh the gains to protected steelworkers.

David Cantor, of the Congressional Research Service, has critiqued our analysis.[3] Cantor concludes that prices will not rise as a result of import quotas, and, by implication, there are no costs to consumers or the economy of the steel VRAs. Cantor's conclusion is based on a failure to distinguish between import prices and domestic steel prices. I show below that even if I

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[1]The author would like to thank James Langenfeld and Paul Pautler for helpful comments. The views expressed are those of the author and do not necessarily reflect those of the Federal Trade Commission, individual Commissioners, or those acknowledged.

[2]See David Tarr and Morris Morkre, Aggregate Costs to the United States of Tariffs and Quotas on Imports: General Tariff Cuts and Removal of Quotas on Automobiles, Steel, Sugar and Textiles, Bureau of Economics Report to the Federal Trade Commission, 1984.

[3]See Congressional Record--Senate, July 21, 1987, S10317. Cantor also critiques a study by Arthur Denzau. Denzau estimated the effects of the steel VRAs on employment in the economy, and found that overall they would be expected to reduce employment. See Arthur Denzau, How Import Restraints Reduce Employment, St. Louis: Center for the Study of American Business, 1987.

make the assumption that Cantor regards as critical to my calculations,[4] and domestic steel prices do not increase, the costs to the economy and consumers of the steel quotas are still quite high, and the costs per job protected in steel remain excessive.

In addition to Cantor's criticism of our research, some have suggested that we forecast steel prices to increase, and that this is a critical part of our study.[5] As I explain below, we did not forecast an increase in steel prices. Although other factors could intervene to cause domestic steel prices to decline, our research in 1984 contended that steel prices would be even lower without the VRAs.

Cantor's Analysis

Cantor notes: "Both researchers [Denzau and Morkre and I] apply economic theory and analytical methods in an appropriate way. The issue is, however: do the researchers make correct assumptions at the outset?" Cantor takes issue, with what he regards as one important assumption. He argues that domestic

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[4]Cantor's assumption is contrary to that of the domestic steelmakers own expert witnesses.

[5]Cantor carefully stopped short of of saying that we forecast an increase in steel prices. Others, however, have misinterpreted our study (or Cantor's criticism) as forecasting an increase in steel prices. See Congressional Record--Senate, July 21, 1987, S10317.

steel prices will not rise as a result of the imposition of the quotas, because of the existence of excess capacity in the domestic steel industry.[6] Excess capacity in the domestic steel industry implies that "an indefinitely large amount of the product would be offered for sale at a fixed price." He infers from this "the import restrictions would not induce an increase in prices."

Cantor, however, overlooks a crucial distinction in his discussion. There is a difference between domestic and imported steel prices, because these products are differentiated in a variety of ways. Jondrow et al. have observed that foreign steel has to sell at a discount to be marketed in the US.[7] In explaining this situation, they note that one must order foreign steel further in advance and await delivery. Thus, if one relies on foreign steel, a larger inventory must be held with higher associated warehousing and inventory costs. Moreover, they argue that domestic suppliers implicitly offer greater security of supply. Additionally, the econometric estimates of Robert Crandall argue for the acceptance of a differentiated product model.[8]

Let us accept, for the sake of argument, Cantor's contention that

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[6]I assumed that the domestic supply curve has an elasticity of 3.5. Cantor believes it should be much larger, approximately "perfectly elastic" in the range of outputs under consideration.

[7]The variety of ways in which domestic and imported steel differ and the amount of money domestic buyers will pay for these differences are explained and estimated by James Jondrow, David Chase and Christopher Gamble in "The Price Differential Between Imported and Domestic Steel," Journal of Business, 55, 1982, pp. 383-399.

[8]See Robert Crandall, The US Steel Industry in Recurrent Crisis, Washington DC: Brookings Institution, 1981.

domestic prices will not rise as a consequence of the import restraints because domestic steel firms are willing to supply all the domestic steel we want without raising prices (i.e., the domestic supply curve for steel is perfectly elastic). Contrary to what is implicitly assumed by Cantor, however, import prices will rise as a consequence of the import restraints. Even if we assume (as we did) foreigners are willing to supply all we want of imported steel without raising prices (i.e., a perfectly elastic supply of imports), import prices will rise. The quota restrains the amount foreigners are allowed to sell, so competition among US buyers for the artificially scarce foreign steel will drive up the price. Thus, a weighted average of imported and domestic steel prices will rise, even if domestic steel prices do not rise.[9]

Impact of VRAs Under Cantor's Assumption

The object of our study was to assess the impact of the steel quotas on consumers and the economy. Cantor believes that a perfectly elastic domestic supply curve is crucial for producing reasonable results. To examine the effect of this assumption on estimates of losses to consumers and the economy from the VRAs, I incorporated a perfectly elastic supply curve (Cantor's assumption) into my model and recalculated the estimates. The results are listed in table 1. For purposes of comparison, I have also listed my original results, based on a domestic steel companies supply being responsive to price

[9]In fact, our estimates had domestic steel prices rise by only one percent, while imported steel prices were estimated to rise by nine percent.

increases, but not perfectly responsive (a supply elasticity of 3.5).[10]

With Cantor's assumption, the domestic price does not rise.[11] The import price, however, rises by almost as much as in our original simulation. That is, the import price rises by 8 percent instead of 9 percent. Since most of the costs to the economy derive from higher quota rents given to foreigners and other losses associated with the import market, the overall costs to the economy do not change very much if domestic steel prices do not increase. The economy loses $732 million per year with Cantor's assumption, rather than $809 million per year.

In our original simulation, part of what consumers lose is captured by domestic producers through slightly higher domestic prices than without a quota. Consumer losses exceed the losses to the economy in my earlier calculation. The gains to domestic producers through higher prices are costs to consumers--but not losses to the economy. With Cantor's assumption (a

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[10] Our original results are conservative because we assume the industry is perfectly competitive; that is, we ignore the effects of imperfect competition. After the imposition of quotas on imports, any increase in price by domestic producers will not bring forth additional imports. Domestic producers may reach an imperfectly competitive equilibrium in that portion of the market left over after the quota allotment. To the extent that this results in a restriction of output below the competitive level, there are additional inefficiency costs and costs to consumers imposed on the economy from the quotas that are ignored in our analysis.

[11] Cantor suggests also that the individual supply curves may even be downward sloping in the range of relevant outputs. This, he contends, in combination with competition among domestic suppliers, may even lead to a decline in the price of domestic steel from the VRAs. It is well known that we cannot have downsloping supply curves of individual firms (throughout the relevant range of outputs) and perfect competition. See, for example, F. M. Scherer, Industrial Market Structure and Economic Performance, Chicago: Rand McNally, 1980, chapter 4.

perfectly elastic domestic supply curve), domestic producers do not gain significantly from the quotas, because prices do not increase. Thus, under Cantor's assumption, annual losses to consumers are the same as annual losses to the economy, and are $732 million per year rather than $1210 million per year.

Although the costs per job per year numbers decline under Cantor's perfectly elastic supply curve assumption, the costs per job per year remain quite high. For each job protected in steel by the quotas, the costs to consumers and the economy is about $58 thousand per year. These costs are in addition to the private costs of providing employment. They do not include wages and other costs necessary to employ a steelworker. Moreover, as we emphasized in our 1984 study, protection does not provide employment to the overall economy. Jobs gained in steel are lost elsewhere in the economy.[12] Thus, even when one makes the assumption that Cantor regards as critical, the estimates of the costs per job per year still remain at a level that many

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[12]Indeed, Denzau has detailed where these job losses are likely to occur. Cantor attempts to dismiss the Denzau study on the same grounds that he dismisses ours; namely, Denzau assumed too large an increase in prices due to the VRAs. To the extent that the VRAs induced a smaller price increase than assumed by Denzau, it would require a recalculation by Denzau, with resulting lower estimates of job losses elsewhere in the economy. Denzau, however, found that protection of steel resulted in about seventeen thousand jobs gained in steel and steel supplying industries, but about 52 thousand jobs were lost in steel using industries, i.e., over three jobs were lost in steel using industries for every job gained in steel or steel supplying industries. Thus, a reestimation by Denzau, with a smaller assumed price increase, of say one-half of his original assumed price increase, would still result in no net increase in employment from the steel quotas.

would regard as excessive.[13]

The Merits of Cantor's Assumption and Evidence

In 1984, most of the big US steelmakers, including US Steel Corporation, Bethlehem Steel Corporation, Inland Steel Company and Armco, petitioned the International Trade Commission for steel quotas. The major economic experts who testified on behalf of the US steelmakers adopted a supply elasticity

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[13]Some may argue that the protection will lead the domestic steel industry to modernize and become more efficient, and that these dynamic efficiencies will lead to a lower cost structure and supply curve. Studies by International Trade Commission staff and by Hufbauer and Rosen reveal, however, that rarely does an industry modernize as a result of protection. (See The Effectiveness of Escape Clause Relief in Promoting Adjustment to Import Competition, USITC publication 1229, March 1982; and Gary Hufbauer and Howard Rosen, Trade Policy for Troubled Industries, Institute for International Economics, March 1986.) Since the protection is intended to be temporary, and the investment lasts for possibly decades, an investor must heavily weigh the price picture after the termination of the relief.

Moreover, there are dynamic effects that are ignored in our analysis that are likely to increase the costs of protection. Protection is likely to slow the cost reducing efforts of steelmakers, who may find it more difficult to negotiate with the United Steelworkers, for example. Moreover, buyers of steel may locate abroad or substitute alternate materials as a result of higher prices. This reduced demand can result in the loss of scale economies.

The carbon steel industry has received a considerable amount of special protection over the past 18 years. There were VRAs on imported steel from Japan and the European Community from 1969-1974. In 1978, the trigger price mechanism (TPM) was instituted (finally terminated in 1982). In 1982, a new VRA with the European Community was initiated; it included many European producers who the US Department of Commerce found were selling fairly in US markets. Thus, this industry does not appear to be good candidate for protection, in which a brief period of protection will result in a modernized, competititve industry.

assumption consistent with ours, and opposite to Cantor. They assumed that the domestic supply surve is upward sloping, as did we.[14] It is indeed strange that we are accused of biasing the results against quotas by using the upsloping supply curve assumption; after all, these estimates were originally prepared for hearings in which the domestic industry's own economic experts utilized the upsloping supply curve assumption in models to provide evidence in support of quotas. Moreover, the elasticities we used were not "assumed" as Cantor would have one believe. Rather, they were taken from the econometric estimates of Robert Crandall.[15] Other available econometric estimates of the supply elasticity of domestic steel are lower than we used, not higher as Cantor suggests.[16] Thus, the upsloping supply curve for domestic steel has been used by economists who defend quotas, as well as critics of US trade policy in the steel industry.

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[14]One of the steelmaker's economic experts in the 1984 hearings before the International Trade Commission indicated that they thought that the domestic supply curve for carbon steel is upward sloping, i.e., the market price must rise in order to induce firms to supply more steel. See Marshall Bartlett, "An Analysis of Injury to the Domestic Steel Industry Caused by Imports," May 3, 1984, pp. B1-B5. Moreover, another economic expert of the petitioners, Walter Carter of Data Resources Inc. agreed with Marshall Bartlett's conceptual analysis. See USITC Hearings on Carbon and Certain Alloy Steel Produsts, Investigation No. TA-201051, transcript at 314.

[15]See Robert Crandall, The US Steel Industry in Recurrent Crisis, Washington DC: Brookings Institution, 1981.

[16]Crandall notes that other econometric estimates of the supply elasticity of the domestic steel industry are even lower than 3.5. In particular, James Jondrow estimated the supply elasticity to be 1.38. See James Jondrow, "Effects of Trade Restrictions on Imports of Steels," in The Impact of International Trade and Investment on Employment, edited by William DeWald, US Department of Labor, Government Printing Office, 1978.

On the other hand, Cantor cites no econometric estimates of the supply elasticity in support of his assumption.[17] Nor does he cite studies by other authors who have utilized his assumption. Given that his criticism rests so fundamentally on a perfectly elastic supply curve, one would have expected his assumption to be based on something more than casual empiricism.

Forecasting Steel Prices

Cantor cites evidence that domestic steel prices have fallen since the imposition of the VRAs. Although Cantor did not make this point, others have claimed that we forecast an increase in steel prices in our 1984 analysis. This reflects a misunderstanding of what we have argued; we made no forecast of steel prices. Steel prices are affected by a variety of factors other than simply the VRAs. These factors include the overall level of industrial activity, the price of competitive products (such as aluminum, plastic and cement) and the price of inputs (such as labor, energy and other raw materials). Given any level of these other factors held constant, our model estimates the amount of price increase of imported and domestic steel. A change in the level of some other variable affecting steel prices, such as the price of fuel oil, steel scrap, iron ore pellets, or metallurgical coal[18] could

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[17] Cantor's assumption appears to be based entirely on his guess at what the supply elasticity should be, based on capacity utilization rates.

[18] All of these cost factors have declined during the VRA period and would reduce steel prices. See Steel Industry: Quarterly Industry Review, Table 12, Indices of Steel Industry Prices and Cost Factors, Merrill Lynch, July 1987.

have the effect of lowering domestic steel prices by more than the VRAs increase steel prices. The fundamental point, however, is that if domestic steel prices have fallen since late 1984, they would have fallen by more without the VRAs.

Conclusion

Cantor's criticism of our past work does not seriously affect the basic welfare results regarding the costs associated with the steel industry VRAs. VRAs are very costly to American consumers and American industry. Our analysis (but not Cantor's) is supported by the domestic steelmaker's own economic experts, as well as the research of others. Finally, the criticism of our model for forecasting prices reflects a misunderstanding of our work; we made no forecast. Instead, we argued that whatever the price level, prices would be lower without the VRAs.

TABLE 1

EFFECTS OF DIFFERENT ELASTICITIES OF DOMESTIC SUPPLY ON
VARIOUS WELFARE MEASURES
AS A RESULT OF THE VRAs ON STEEL

(In millions of base year dollars)*

	Annual Costs Supply Elasticity From:		in Present Value Five Years of Costs Supply Elasticity From:	
	Cantor**	Tarr-Morkre	Cantor**	Tarr-Morkre
Consumers' Losses	732	1,210	2,110	2,370
Losses to the Economy	732	809	3,000	3,320
Gains to US Producers	0.0	405	0.0	1,660
Quota Rents to Foreigners	515	578	2,110	2,370

	(in base year dollars) Supply Elasticity Equals:	
	Cantor**	Tarr-Morkre
COSTS TO THE ECONOMY PER YEAR FOR EACH JOB PROTECTED:	57,863	81,906
COSTS TO CONSUMERS PER YEAR FOR EACH JOB PROTECTED:	57,863	122,913

*The base year is Sept. 1983 to August 1984.

**A perfectly elastic supply curve was approximated with an elasticity of 1000.

SOURCE: Author's estimates.