

relative intensity of labor in the production process of these industries.

Second Opinions

To the best of our knowledge, ours is the only analysis that has considered the VER impacts over the first full three years of the program. Moreover, it is difficult to compare our results with those in other studies because of differences in methodologies. Studies by Feenstra (1982) and Gomez-Ibanez, Leone, and O'Connell (1983) provide some useful comparisons to our results.⁷ Feenstra observed that, after adjusting for inflation and quality upgrading, the average import price of new Japanese cars rose 3.1 percent in 1981. Assuming a price elasticity of 2 for new Japanese cars, Feenstra estimated that 1981 sales of Japanese cars fell 220,000 units, resulting in gains in U.S. auto-worker employment of 5,600. Feenstra calculated that the consumers' surplus loss was \$322 million in 1981. He also examines the effects of VERs under the assumption of a 0.9 elasticity for Japanese automobile services. In this case, sales of Japanese cars would have fallen 123,000 units, but total revenues spent on Japanese cars would have risen. Consequently, U.S. new-car sales would have declined 5,300 units, and U.S.

autoworker employment would have fallen by 600 workers. The total loss in consumers' surplus in this case equaled \$314 million.

Gomez-Ibanez, Leone, and O'Connell constructed an annual model of the U.S. automobile market to measure the effects of the VERs that did not include a quality-adjustment allowance or an inventory influence. Instead, they divided the U.S. market into basic small cars (Japanese and all others), luxury small cars (Japanese and all others), and traditional cars. The researchers simulated their model, which was not specific to a particular year, under alternative assumptions about the overall strength of the U.S. new-car market and different price/quantity reactions to the VER program from domestic car producers. In the case that most resembled actual 1981 and 1982 market conditions, the VER program raised Japanese new-car prices 2.6 percent and reduced Japanese new-car sales in the United States 6.7 percent per year. U.S. car production rose 0.5 percent, and U.S. autoworker employment increased 6,500 workers. Gomez-Ibanez, Leone, and O'Connell estimated that the loss to consumers in all segments of the market associated with their model simulation was \$566 million per year.

Economics Research Center Paper no. 17, 1982, and Jose A. Gomez-Ibanez, Robert A. Leone, and Stephen A. O'Connell, "Restraining Auto

Conclusion

International trade theory demonstrates that artificial barriers against imports raise prices of traded goods, transfer income from consumers to producers, and create production and consumption inefficiencies. This article has illustrated these effects for the case of the Japanese voluntary restraints on new cars exported to the United States. The results suggest that in its initial year the VER program had little effect on the U.S. market for Japanese cars and did not appreciably create new auto-industry employment in the United States. At the time, inventories of new Japanese cars were overstocked because of weakening new-car demand and high inventory-carrying costs. With economic recovery under way in the United States in 1983, inventory shortages at the dealers' level became extreme. In such an environment, the VERs had a substantial impact on the U.S. new-car market. According to our partial equilibrium estimates, the VER program thus far cost approximately \$2.7 billion in lost consumers' surplus. The program's subsequent impact on U.S. auto-worker employment, however temporary, probably was very small. It thus would seem that the VER program is an expensive way to treat the auto industry's malaise.

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economic commentary

The Costs of a Protectionist Cure

by Michael F. Bryan
and Owen F. Humpage

In recent years, many ailing U.S. industries have blamed their ill health on foreign competition and have sought a cure in limiting the flow of imports. While proponents of protectionist legislation argue that trade restrictions are necessary to protect U.S. jobs, economic theory indicates that protectionism may secure jobs at a substantial cost to consumers and economic efficiency. In capitalism, unlike in medicine, isolating the patient can cause the disease to spread. The Japanese Voluntary Export Restraint (VER) program, which restricts exports of Japanese cars to the United States, provides a useful example of such a costly cure.

The Auto Industry's Malaise

Until the mid-1970s, sales of intermediate and full-sized cars dominated the U.S. auto market. Confronted with rapidly rising gasoline prices and economic recession, American consumers dramatically altered their automobile preferences in favor of more economical, fuel-efficient models. By 1980, sub-compact represented the largest

share of the U.S. new-car market—42 percent, compared with 31 percent in 1975 and 12 percent in 1965. Foreign producers, especially the Japanese, had an apparent advantage in the production of small, fuel-efficient cars and gained a substantial share of the U.S. new-car market during the 1970s.¹ The Japanese share of the new-car market rose from 6 percent in 1972 to 12 percent in 1978. As the decade closed, domestic new-car sales contracted, falling 29 percent between 1978 and 1980. Sales of new Japanese cars, however, continued to expand, increasing sharply to 21 percent of the market by 1980.

As declining domestic car sales idled U.S. labor and capacity, the United Auto Workers (UAW) and some of the large domestic car producers aggressively sought protection from their foreign competitors, especially the Japanese automakers. In June 1980, the UAW petitioned the International Trade Commission (ITC), alleging that imports were a substantial cause of serious injury to the domestic industry and seeking both higher tariffs and quantity restrictions against car imports. Ford Motor Company filed a similar petition in August 1980. The ITC, however, rejected the petitions. Failing to enlist the ITC's support, lobbyists aimed their efforts more directly toward the Japanese government.

Both the Carter and the Reagan administrations, while favoring neither legislated quotas nor tariffs, encouraged the Japanese to limit voluntarily their new-car exports to the United States. In May 1981, the Japanese government finally agreed to "voluntary" limits on their car shipments to the United States.

Japan's initial agreement to limit car exports extended from April 1981 through March 1984; in November 1983, the Japanese government extended the agreement through March 1985. During its first three years, the agreement limited Japanese car exports to the United States to 1.68 million units, contrasting with sales of 1.91 million units in 1980 and 1.75 million units in 1979.² Under the current fourth-year extension of the program, the limitations on Japanese new-car exports have increased to 1.85 million units.

VER Side Effects

By limiting the flow of new Japanese cars into the United States, the VER program creates an artificial scarcity that drives up new-car prices. As the prices of new Japanese cars rise, some potential buyers will purchase new domestic cars, other imported cars, or used cars, thus placing upward pressure on the prices of these vehicles. Because of the VERs, consumers now purchase fewer cars in total

This article summarizes the results found in Michael F. Bryan and Owen F. Humpage, "Voluntary Export Restraints: The Cost of Building Walls," *Economic Review*, Federal Reserve Bank of Cleveland, forthcoming.

The authors are economists with the Federal Reserve Bank of Cleveland. Diane Mogren provided research assistance for this article.

The views stated herein are those of the authors and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

1. For a review of the issues concerning Japanese production advantages, see Susan A. Loos, "The Japanese Cost Advantage in Automobile Production," *Economic Commentary*, Federal Reserve Bank of Cleveland, July 2, 1984.

2. In subsequent years of the program, the VER limitations were to rise by 16.5 percent of the growth experienced in U.S. new-car sales during the previous year. The recession in the United

Federal Reserve Bank of Cleveland
Research Department
P.O. Box 6387
Cleveland, OH 44101

Address Correction Requested: Please send corrected mailing label to the Federal Reserve Bank of Cleveland, Research Department, P.O. Box 6387, Cleveland, OH 44101.

and pay more for them. Economists can measure this loss and refer to it as a reduction in *consumers' surplus*.

The reduction in consumers' surplus consists of two important components. The first component is a transfer of real income away from U.S. car buyers to domestic and foreign producers of new cars. After the imposition of VERs, each Japanese car and any closely substituting model were sold at higher prices.³ The income transferred from U.S. consumers to U.S. car manufacturers does not represent a net loss to the U.S. economy, as some individuals gain at the expense of others. The income transferred to foreign producers, however, does represent a loss to the United States, especially in the short run. Although most of the income transferred from U.S. consumers to Japanese producers eventually returns to the United States as foreigners buy U.S. exports or invest in U.S. assets, such transactions could take many years to complete. Moreover, even in the long run, the United States could incur a loss if the prices of U.S. imports rose relative to the prices of U.S. exports because of the VERs.

In addition to these income transfers, the reduction in consumers' surplus associated with trade restraints reflects production inefficiencies and foregone consumption opportunities. Part of the VER-induced reduction in Japanese car sales is replaced by additional domestic car sales. Hence, the VERs result in more cars being produced by less efficient manufacturers—real resources are wasted. Part of the VER-induced reduction in Japanese car sales will not be replaced. Overall, fewer cars (domestic plus Japanese) will be sold as prices rise. The VERs deny consumers the privilege of buying these additional units at their pre-

VER lower prices. This foregone consumption opportunity is a net efficiency loss to consumers. Both the production inefficiency and foregone consumption opportunities resulting from the VER program represent a loss to the world economy that initially is borne by U.S. consumers.

Before explaining our attempts to measure the effects of the VER program, we should point out the tendency of VERs to alter the *quality* of imported goods.⁴ Import restraints based on quantities, such as quotas, specific tariffs, and VERs, tend to encourage an improvement in the quality of the restricted good. The effect has been observed in the markets for imported textiles, footwear, dairy products, steel, and Japanese cars. To understand this phenomenon, consider an imported car as consisting of a bundle of appealing characteristics such as transportation, comfort, and aesthetic qualities. In limiting imports, the VERs restrict the amount of transportation that Japanese producers can sell in the United States, but not the amounts of other qualities (comfort and aesthetic appeal) that their cars can provide. Foreign producers will tend to upgrade the unrestricted aspects of the product in an attempt to maintain their profits. When measuring the effects of the VER program, one should exclude price increases attributable solely to quality improvements, as these do not reduce consumers' economic well-being.

Cost of the Treatment

We constructed an econometric model of the U.S. market for new Japanese cars to measure the price and quantity impacts of the VER program. In building the model, we wanted to incorporate the role of new-car dealers and inventories in

the market-clearing process. VERs restrict imports, but sales can be accommodated from inventories over the near term. The existence of inventories dampens the effects of import restraints; as inventories become tight relative to dealers' desired inventory positions, dealers raise prices.

While it is appropriate to measure the effects of VERs using transactions (or retail) price data, such data are not readily available. Consequently, we estimated transactions prices using wholesale prices and a dealer's price markup that fluctuates in response to inventory positions. We also adjusted prices for upgrading new-car options.

The model was estimated using quarterly data from 1976 through 1983. In many ways, our results were similar to previous studies of the new-car market.⁵ We found that real permanent income is the primary determinant of Japanese new-car sales and that sales of new Japanese cars rise with car operating costs (gasoline, insurance, and repairs). We also found a price elasticity for new Japanese cars of 1.3, which is to say that a 1 percent increase in new Japanese car prices tends to decrease unit Japanese new-car sales by 1.3 percent. This elasticity estimate is a crucial link between the quota and its ability to transfer sales to the U.S. new-car market.

We next simulated the model under a set of assumptions that we believe to be consistent with *no* VERs. From the price and quantity measures, we approximated the income transfers and losses associated with the VERs. In reviewing the model simulation results, two caveats need be emphasized. First, our empirical analysis, like most empirical analyses, produced tentative approximations resulting from the small size of our sample and the unavoidable difficulties associ-

ated with estimating structural models. Second, we made assumptions that would produce the largest possible price and quantity impacts *for new Japanese cars*. However, our measures of income transfers and efficiency losses did not include those associated with VER-induced price increases *for other cars sold in the United States*; consequently, they understated the total consumer cost of the program.

According to the results of the model simulations (shown in table 1), during the first year of the VERs, there was virtually no net price pressure in the Japanese new-car market. The options-adjusted transactions price of new Japanese cars increased \$11 per unit because of the VERs, primarily reflecting a rise in wholesale prices. Dealers did not increase their markups, as they experienced an overstocked inventory position prior to the VER program that lasted halfway through the program's first year. The effect of VERs was to lower sales by only 4,000 units during the first year, a negligible amount for a market in which sales averaged approximately 1.8 million units in the previous two years. As dealers experienced more sizable inventory shortages during the second year of the VERs, average transactions prices increased \$273; most of this increase reflected dealers' markups, as the wholesale price of new Japanese cars rose \$51. Unit sales fell 78,000 during the VERs' second year. With the U.S. economic recovery under way in 1983, the VERs' impact on prices intensified. Transactions prices rose \$1,114. Again, most of the options-adjusted price increases reflected dealers' markups (\$956), compared with an options-adjusted wholesale price increase of \$158. As a result, unit sales fell 299,000 units between 1983:IIQ and 1984:IQ.

The total three-year loss in consumers' surplus resulting from the VER-induced increase in Japanese new-car prices was approximately \$2.7 billion. Most of the loss occurred in 1983, when the program was most binding on the U.S. market. Of this total amount, \$2.6 billion represents a transfer of purchasing power to producers and dealers of Japanese cars from consumers who continued to buy Japanese cars at artificially high prices. Approximately 80 percent of this income transfer accrued to U.S. dealers of Japanese cars and does not represent a net loss to the U.S. economy. Japanese producers received the remaining \$400 million. Of the total reduction in consumers' surplus, we attribute a \$177-million loss to increased inefficiencies in production and foregone consumption opportunities.

Using the estimates obtained from the Japanese auto supply and demand model, we can speculate about the effects of the VER program on the amount of U.S. cars produced and the amount of U.S. automobile employment "protected." We determined that the VER program increased U.S. car production by 399 units in 1981, 3,444 units in 1982, and 16,768 units in 1983 (see table 1). Having estimated the units produced, we determined the associated employment effects. Adopting a Congressional Budget Office (1982) estimate that it takes 200 man-hours to produce one subcompact car in the United States, we calculated that the VERs induced an additional 79,800 production man-hours during its first year, 688,800 hours in 1982, and 3.4 million hours last year.⁶ We further estimated that VERs had little employment impact during the first year of the program (38), and rather minor impacts during the next two years—328 and 1,492 jobs in 1982

Table 1 The Market Impacts of VERs: 1981-83

	1981	1982	1983
Transactions price increase, dollars	11	273	1,114
Unit sales decline	4,000	78,000	299,000
Japanese revenue lost, millions of dollars	2.3	21.3	101.7
U.S. production increases, units	399	3,444	16,768
U.S. employment gains, persons	38	328	1,492
Total wealth transfers from consumers, millions of dollars	21.6	500.1	2,040.0
Efficiency loss, millions of dollars	0.0	10.7	166.4
Total consumers' surplus loss, millions of dollars	21.6	510.8	2,206.4

NOTE: The years correspond to the VER periods, beginning in the second quarter of the current year and running through the first quarter of the subsequent year.

and 1983, respectively. These employment gains seem negligible when contrasted with indefinite layoffs of U.S. autoworkers—over 250,000 workers at the industry's 1982 employment trough.

Moreover, these employment gains do not necessarily represent net benefits to the United States. As discussed earlier, the U.S. revenue gains represent a transfer from consumers to domestic producers and workers. These funds now remain in the United States and increase jobs in the automobile industry, but this does not necessarily imply a long-run net increase in U.S. jobs. Most of the funds sent abroad to pay for Japanese imports eventually will return to the United States as foreigners buy U.S. exports. Any gains in auto industry employment because of the VERs must be compared with potential losses in U.S. employment among export-oriented industries. The net employment result depends on the decline in exports and the

States, however, continued to hamper domestic sales. U.S. new-car sales actually declined from 8.9 million units in the year preceding the VERs to nearly 8.1 million units in each of the first two years of the program. Because the U.S. market failed to grow over the period, Japanese car limitations remained at 1.68 million units throughout the first three years of the program.

The quota figures cited do not include certain car-like vehicles (that is, some four-wheel-drive vehicles) that, when included, raise the limitations to 1.76 million units per year in the 1981-83 period and 1.95 million units currently.

3. Although Japanese producers earn more revenue on the units they sell, they lose revenue from the units they no longer export to the United States. The net effect on revenue depends on how sensitive U.S. consumers are to price increases on Japanese cars.

4. We use the term *quality* rather loosely, referring to changes in the physical characteristics of the automobile.

5. See, for example, Michael F. Bryan, "Issues in the 1983 Auto-Sales Outlook," *Economic Commentary*, Federal Reserve Bank of Cleveland, March 7, 1983.

6. U.S. Congress, U.S. House of Representatives, Subcommittee on Trade of the Committee on Ways and Means, *Domestic Content Legislation and the U.S. Automobile Industry: Analyses of H.R. 5133*, August 1982.