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MEMORANDUM

TO: Ev Ehrlich
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FROM: Stephen Parker SP

SUBJECT: Revenue Estimate for Auctioning Existing Import Quotas

Chairman Gray of the House Budget Committee has requested an estimate of the potential revenue effects of auctioning U.S. import quota rights to the highest bidder. Our analysis shows that about $3.7 billion could be raised in 1987 if existing import quotas, including voluntary export restraints (VERs), were auctioned. Over the three-year period ending in 1989, the period that most of these policies are in effect, a total of $12.3 billion could be collected. Since the levels of many of the existing quotas are subject to renegotiation after 1989, revenue estimates are not provided beyond that year. This memo explains how these revenue estimates are derived. No attempt is made to examine the overall merits of this action. 1/

Potential revenue sources from auctioning import quotas include only those quantitative barriers to imports that have been formally negotiated and implemented by the U.S. government. The revenue estimates assume perfect competition in all markets and no foreign retaliation. Foreign governments are presumed to continue to limit their exports to the current VER levels even if the United States changes the terms of the original agreements by auctioning the quota rights instead of granting them freely to

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1. The many administrative problems that might arise with the implementation of a system of quota auctions are examined in a forthcoming book--*Auction Quotas and United States Trade Policy* by C. Fred Bergsten, Jeffrey Schott, Wendy E. Takacs, and Kimberly A. Elliott of the Institute for International Economics, Washington, D.C.

the foreign governments. These assumptions imply that the total rents from all existing import quotas, whether currently flowing to foreign suppliers or domestic importers, could be collected by the U.S. government through an auction. If either of these simplifying assumptions are not satisfied, the net revenue collected could be much less. Moreover, even if these assumptions hold, the state of the art of estimating import quota rents is hindered by deficiencies in key data. Consequently, the actual revenue raised by auctioning quotas may differ somewhat from these estimates.

METHODOLOGY

The revenue estimates assume that foreign governments do not alter their behavior in response to the change in the system of allocating quota rights. Foreign governments often are willing to enter into VERs with the United States because VERs allow them to allocate the higher profits on imports created by the quota to their own producers. Taxing these rents--by auctioning the quota rights--causes foreign suppliers to lose these profits. Foreign governments, therefore, may respond to this change in the basic terms of the original agreements by abrogating the deal and increasing their export levels. If no export limits are applied, then there are no quota rents to be auctioned. Under this scenario, protection could only be provided by an import quota enforced unilaterally by the United States. Unilateral import quotas, however, could induce foreign retaliation in the form of restrictions to U.S. exports in other sectors, which would lower U.S. government revenues obtainable in those sectors.

Perfect competition in all markets is also assumed. This assumption assures that foreign suppliers cannot change profit levels and that bidders in the auction cannot collude to extract any part of the quota rents.

The U.S. government employs several different types of quantitative trade policies to limit the quantity of imports of various products. The most important of these current policies enforced by the U.S. government include voluntary export restraints (VERs) for textiles, apparel, steel, motorcycles, and machine tools; and, import quotas for sugar, cheese, and several other agricultural products. Most of these policies, especially the VERs, are applied through a series of bilateral agreements with supplying countries. As a result, the quotas are more stringent for some countries than others, and in several cases, major supplying countries of a certain product are not restricted by the quota at all. Since the U.S. government can only sell quota rights that it controls, only formally negotiated and currently implemented import quotas are included as potential revenue sources.

Although each of these policies are administered differently, the final outcomes in economic terms are similar. By limiting the quantity of imports into the economy, an artificial scarcity is created that forces domestic consumers to offer higher prices as they bid among themselves to buy the now scarce imports. Under competitive market conditions, and if the U.S. government gives the quota rights to foreign governments at no charge, this extra money, called a quota rent, goes to the foreigners. 2/ If, however, the U.S. government sells these quota licenses, then these quota rents can be kept in the U.S. as government revenue. In fact, auctioning quota rents, under most conditions, has the same revenue effect as an equivalent tariff. 3/

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2. Quota rents are only one part of the total cost of import protection to domestic consumers. Even if all protection rents are taxed by the U.S. government, as would be the case with a tariff or an auctioned quota, domestic consumers would still be worse off because their real income falls. The economy, on net, would be further penalized because protection tends to encourage production in relatively inefficient sectors of the domestic economy. For example, quotas rents are far less than the total cost of protection when a quota bans all imports. Since there are no import rights, there are no quota rents. But the cost of protection to the domestic economy could be quite high.

3. Tariffs are always binding--they must be paid on each dutiable import. But the impact of quotas differ depending on market conditions and which countries are covered by the quota. If demand for a product under quota increases, the increased scarcity of the import raises the value of the quota right. If demand falls, the quota right is less valuable. In some cases, a quota may have no effect at all. A quota is not binding when the quantity of imports falls short of the quota limit. In this case, since importers have satisfied their demands without any restraint from the quota, quota rents are zero, ex post. But quota rights would be auctioned off at the beginning of a period when importers would not know for certain whether a quota would be binding. Thus, the revenues that could be expected to be raised by auctioning quotas depends on expectations of how important the quota will be over the relevant period of the quota right. If quota rights can be sold in a secondary market--for example, across suppliers of a product in a country, or even across products or countries--then the risk of changes in market conditions can be spread over a more diverse set of importers. If orders for one firm do not meet expectations, while orders for another firm exceed their quota rights, then the quota rights can be sold by the surplus firm to the deficit firm. The greater the reallocation possibilities, the lower the risk of initially purchasing the right, raising its value ex ante. By allowing higher imports, though, secondary markets would lower the average quota rent ex post. Import values will decline by the degree that the domestic government can collect the quota rents that had been transferred abroad.

Technically, the quota rents, which represent the maximum revenue that can be collected by auctioning import licenses, equals the quantity of the imports allowed under the quota times the average quota rent per import unit. [4] In value terms, the rent equals the quota constrained value of imports times the ad valorem equivalent of the quota rent. The quota rent per unit is the difference between the price of an imported product with and without the quota. This can be estimated directly if the price of the import sold in the domestic market can be compared with the price of a similar good sold in an unrestricted market, say a third country or a world market. [5] Where direct price comparisons are not available, economic models must be used to estimate the quota rents. In addition, since these estimates are for future years, the CBO economic forecast must be used to designate future economic conditions.

RESULTS

Table 1 presents estimates of the quota rents resulting from each major U.S. import quota (including negotiated VERs) in force. These rents represent the maximum revenue that the U.S. government could raise by auctioning quota rights to the highest bidder.

REVENUE ESTIMATES BY SECTOR

For agricultural products, the calculation of quota rents is relatively straightforward. The USDA sets, often one year in advance, the

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4. Because of data limitations, these estimates assume that import quota rents per unit are about the same across all supplying countries affected by the quota. This approach implies that the potential revenue from auctioning bilateral quotas is about the same as the revenue from auctioning global quotas. Since a global quota produces more quota rents than does a series of bilateral quotas with the same import quantity limitation--low cost suppliers expand their imports at the expense of higher cost producers under a global quota--and since most import quotas are currently enforced bilaterally, this assumption gives the estimates an upward bias.

5. Any price comparisons must account for differences in product quality, tariffs and shipping costs. Also, quota rents do not include tariff revenues collected.

TABLE 1. QUOTA RENTS (In billions of dollars)

	1987	1988	1989
Agriculture:			
Sugar	0.3	0.3	0.3
Dairy	0.2	0.2	0.2
Peanuts	*	*	*
Manufactures:			
Machine tools	0.1	0.1	0.1
Motorcycles	*	*	*
Steel	0.7	0.5	0.9
Textiles	0.2	0.3	0.3
Apparel	2.2	2.5	2.9
Total	3.7	3.9	4.7

SOURCE: Congressional Budget Office.

* Values are less than $50 million.

import quota level needed to maintain the announced domestic support price. The USDA also monitors and sometimes forecasts comparable world prices. For agriculture, then, the main uncertainties are future changes in world market prices, domestic price supports, and import quotas. Except for sugar, these have remained relatively constant over time. The import quota for sugar has been declining rapidly in recent years, and is likely to continue to fall as U.S. consumption declines and the domestic supply of nonsugar sweeteners increases.

Quota rents are much more difficult to estimate for the textile, apparel, steel, and machine tool quotas. [6] It is extremely hard to disentangle the effects of an import quota from the many other factors influencing these sectors over time. The CBO steel model is used to estimate the quota rents from the steel VER, which is assumed to be set at

6. The quota rents resulting from the VER on heavy motorcycles are negligible.

a 23 percent import share of the domestic market. For textiles and apparel, there is little agreement over the average quota rent resulting from the import limitations of the Multi-Fiber Agreement (MFA). As a result, the average rent is set by averaging several estimates. Imports are estimated using the *Major Shippers Report* for 1986, a report on MFA covered imports compiled by the Department of Commerce, and assumed rates of growth for 1987 through 1989. Since the VER on machine tools has just been announced, estimates of the quota rent on these has to be inferred from announced quota limits and assumed import price elasticities. *11* (The estimate for machine tools was done by Victoria Farrell.)

Agriculture

Sugar. The 1987 sugar quota was reduced significantly, from about 1.7 million short tons in 1986 to about 1.0 million tons in 1987. The presumption is that it will stay this low, or lower, in the next couple of years.

The sugar quota is designed to allow imports to bridge the gap of domestic excess demand at a supported price of about 21 cents per pound. Domestic demand for sweeteners has been declining, and the domestic supply of nonsugar sweeteners has been increasing, reducing excess demand for imports. Since the government does not store sugar, import quotas must be reduced to equilibrate domestic supply and demand at the supported price.

World prices are at an artificially low price of 7 to 8 cents, while the domestic price is supported around 21 to 22 cents per pound. The rent per pound is about 13 to 15 cents. That is, at the limit, importers would be willing to pay around 15 cents per pound for the right to import a pound of sugar. This price is not what the wedge would be without government policies worldwide. Average world production costs are around 12 cents per pound, but the world price is lower because of export subsidies in the EEC and the price supports in the United States.

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7. When quota limits are changed over time, which occurs most profoundly when a new quota is implemented, tariff revenues also change for dutiable imports. For example, the quota on machine tools reduces imports by about $160 million. Given an average tariff rate of about 4.3 percent, tariff revenues decline by about $7 million.

Therefore, the revenue that could be collected in 1987 by auctioning off the sugar quotas of 1 million tons (= 2 billion pounds) is about: $.15 x 2 billion pounds = $0.3 billion. This amount is probably the upper limit for revenue from 1988 and beyond, since new quotas are likely to decline, but the rent per unit should remain about the same.

Dairy. Import quotas exist for several dairy products, most importantly cheese, but also butter and powdered milk. The world price of cheese is considerably lower than the domestic price, largely because of the U.S. import quota and policy induced excess supplies in the EEC. Currently, the domestic price of cheese is about $1.26 per pound, whereas the world price is about $0.54 per pound. These prices yield a quota wedge of $0.72 per pound. The quota is around 240 million pounds. Therefore, the quota rent is $173 million, or $0.2 billion.

Peanuts. High domestic prices for peanuts are supported by a very tight import quota of 2 million pounds, about 0.1 percent of the domestic market. The U.S. is the largest exporter of peanuts, but the exports are excess supplies not covered by the support price. The domestic support price in the 1986 marketing year was 27.95 cents per pound, compared with an average export price of 12.5 cents per pound. The export price approximates the world price. For the 1987 marketing year, the domestic support price is about 30 cents per pound, while the average export price so far is about 19 cents per pound. There is a tariff of 3 percent. Thus, a quota rent per pound of import of about 11 cents per pound, times the 2 million pounds of imports, gives only about $220,000 in potential quota rents.

Steel

Steel is protected by a negotiated VER agreement with a number of countries, most notably the EEC, Japan, Korea, Brazil, and Mexico. The agreement is in effect until 1989. Japan and the EEC make up about two-thirds of total import supply. Initially, these countries were set to have no more than 16 percent of the U.S. market share for all steel products. Canada, Taiwan, and several other countries are not covered by VERs. When the agreements began in 1985, the countries not covered made up about 4.5 percent of the market, and they agreed informally not to take advantage of the VER to gain market share. But the market shares of both groups of countries have not met their targets. There is a general agreement that a political compromise by the U.S. government, the U.S. steel industry, and foreign producers has been reached that sets an overall import market share limit of about 23 percent. This limit was almost reached in 1986, even given the USX steel strike.

The most significant change in steel market conditions has been the dramatic decline in the value of the dollar against the main steel importers-- Japan, the EEC, and other European countries. Although foreigners are just beginning to raise prices in response to the depreciation of the dollar, it is expected that domestic producers would gain market share in 1987 and 1988 even without the VER, as import prices begin to increase significantly. Exchange rates with developing countries and Canadian suppliers have not moved in favor of the United States, so these market shares may not be directly affected by changes in the composite exchange rate.

Because of sluggish industrial growth worldwide over the last several years, world steel supplies exceed demand, and world steel prices are weak. Foreigners have been forced to moderate price increases in response to the VER both because of slack demand and because of excess capacity in the U.S. market. This situation has made it very difficult for domestic producers to increase prices as well.

Thus, as a result of all these factors, but most notably the decline in the exchange rates, the quota rents for 1987 and 1988 will probably be lower than they were in 1985 and 1986, even though the import share exceeded 23 percent in the first two years of the program. Using the CBO steel model, modified to take into account the smaller than usual passthrough of exchange rate changes to import prices experienced in 1985 and 1986, estimates of quota rents for a VER set at 23 percent of domestic consumption for 1987, 1988, and 1989 are $0.7 billion, $0.5 billion, and $0.9 billion, respectively. These rents are derived by comparing the model solution with and without the import quota. Quota rents are included only for those countries' imports where the U.S. has a formally negotiated VER, which make up about 78 percent of total steel imports.

Quota rents for the steel VER are calculated as shown in Table 2:

TABLE 2. QUOTA RENTS FOR STEEL (In billions of dollars)

	1987	1988	1989
Total Imports with 23 Percent Quota	11.0	11.8	12.8
Imports Covered under VER	8.6	9.2	10.0
Average Quota Rent	8.6%	5.5%	9.2%
Total Quota Rent [a]	0.7	0.5	0.9

SOURCE: Congressional Budget Office.

a. Total quota rent equals the average quota rent times the imports covered under the steel VER.

Textiles and Apparel

Most textile and apparel imports are limited by the Multi-Fiber Agreement (MFA), which is a series of bilateral VERs mainly covering imports from developing countries and Japan. Imports from other countries, most notably Canada and the EEC, are not covered. The MFA primarily covers products made of cotton, wool, and man-made fibers. Some apparel and textile products are not covered, most importantly products made of leather, plastic, rubber, jute, and pure silk. MFA restraints have traditionally allowed between 4 and 6 percent growth of imports into the U.S. for the covered countries and products. Recent tightening of the MFA allows almost no growth, by quantity, for the big three importers--Hong Kong, Taiwan, and South Korea. Textile and apparel imports also face the highest tariffs of any product group of imports into the United States. Average tariff rates in 1985 are about 11 percent and 21 percent for textiles and apparel, respectively.

Since only actual quotas can be auctioned, the amount of imports directly controlled by the MFA must be determined. Then, the quota rent per import must be estimated in order to calculate the total quota rent. The Department of Commerce's *Major Shippers Report,* a listing of the quantity and value of imports covered under the MFA, reports that MFA covered imports reached $10.5 billion for apparel and $2.1 for textile products in 1986. These import levels are about 41 percent and 51 percent lower than reported apparel and textile imports by industry, respectively (see Department of Commerce, *1987 U.S. Industrial Outlook.*). MFA covered import values are almost half of total apparel and textile industry imports because MFA covered imports exclude imports from such major noncovered countries as Canada and the EEC, but also because many apparel products are not included in the MFA (see above paragraph) and restraint agreements are not in place for all possible MFA products in all possible MFA countries. MFA covered import values are assumed to grow at 15 percent a year for both textiles and apparel, a rate slightly below the annual growth rate in 1986 in recognition of the tighter agreements negotiated in 1986. 8/

Moreover, quotas are not binding for all covered products. Department of Commerce experts estimate that about 80 percent to 90 percent of all quotas are binding. Auctioning quota rights when suppliers do not expect the quota to be binding would raise little revenue.

Determining the average quota rent per unit is a much more difficult task, since the quota rents are embedded in the import price. Most estimates rely heavily on the work of Morris Morkre. 9/ Morkre estimated the charges that Hong Kong exporters were willing to pay, in a freely operating secondary market, to buy quota rights to export apparel to the United States. His estimates were for nine apparel product groups in 1980. Averaging these products, taking into account that U.S. imports are distributed about equally between natural fiber and man-made fiber apparel, yields an average quota rent of about 20 percent.

It is likely that these Hong Kong charges overstate the quota rent on all Hong Kong exports because they represent only those quotas rights sold

8. MFA import growth limits are delineated by quantity. Import values can grow much faster than quantities because suppliers try to upgrade the quality of their exports into higher priced product lines.

9. Morris E. Morkre, *Import Quotas on Textiles: The Welfare Effects of United States Restrictions on Hong Kong; An Economic Policy Analysis,* Bureau of Economics Staff Report to the Federal Trade Commission, August 1984.

on the secondary market. [10] Quota rights on the secondary market gain value as the end of the quota period approaches. Further, the quota rents will be higher for Hong Kong than for other countries since Hong Kong is the most efficient apparel producer with the most stringent export restraints. On the other hand, the other major apparel suppliers--Taiwan, South Korea and China--are now very competitive with Hong Kong, and the MFA quotas have become more stringent since 1980. As a result, a 20 percent average quota rent is set for apparel.

No data is available for estimating an average quota rent for textile imports. Hufbauer, et al, used a 7.1 percent quota rent for textiles. [11] Recognizing that MFA limits have been tightened for textiles, a 10 percent average quota rent is set for this estimate.

Quota rents for the MFA are calculated in Table 3 and Table 4.

TABLE 3. MFA QUOTA RENTS FOR APPAREL (In billions of dollars)

	1986	1987	1988	1989
Total Imports for the Apparel Industry	17.7	20.4	23.4	26.9
Controlled MFA imports	10.5	12.1	13.9	16.0
Controlled MFA Imports with Binding Quotas	9.5	10.9	12.5	14.4
Average Quota Rent	20%	20%	20%	20%
Total Quota Rents [a]	1.9	2.2	2.5	2.9

SOURCE: Congressional Budget Office.

a. Total quota rent equals the average quota rent times the controlled MFA imports with binding quotas. Ninety percent of the MFA quotas are binding.

10. The Hong Kong government allocates the initial quota rights at no charge. Then, suppliers can buy and sell these rights as each supplier's conditions change.

11. Gary Hufbauer, Diane Berliner, and Kimberly Elliot, *Trade Protection in the United States: 31 Case Studies*, Institute for International Economics, Washington, D.C., 1986.

TABLE 4. MFA QUOTA RENTS FOR TEXTILES (In billions of dollars)

	1986	1987	1988	1989
Total Imports for the Textile Industry	4.3	4.9	5.7	6.5
Controlled MFA Imports	2.1	2.4	2.8	3.2
Controlled MFA Imports with Binding Quotas	1.9	2.2	2.5	2.9
Average Quota Rent	10%	10%	10%	10%
Total Quota Rents [a/]	0.2	0.2	0.3	0.3

SOURCE: Congressional Budget Office.

a. Total quota rent equals the average quota rent times the controlled MFA imports with binding quotas. Ninety percent of the MFA quotas are binding.

Machine Tools

The U.S. negotiated a VER for various types of machine tools with Japan and Taiwan. The agreement starts in 1987 and lasts five years. The U.S. government also notified West Germany and Switzerland that they could not increase their exports of certain machine tool products to the U.S. over this period. West Germany and Switzerland, however, refused to negotiate a VER. [12/] The VERs are designed to limit some machine tool imports to about 1981 market shares, which are estimated to require a cutback of about $170 million of imports from Japan and Taiwan (a $159 million decline for Japan). Under this quota, then, imports from these two countries are estimated to be about $608 million. Assuming an import price elasticity of -1 yields an estimated average quota rent per unit of about 23 percent. Multiplying the average rent per unit times the import quantity after the quota yields quota rents of about $0.1 billion for 1987. Quota rents are expected to remain at that level through 1989. These estimates are based on preliminary data from the Department of Commerce.

12. Even if the U.S. unilaterally imposed a quota on machine tool imports from these two countries, the revenue estimates would not change substantially.

COMPARISON WITH OTHER ESTIMATES

The Institute for International Economics (IIE) has also estimated the revenue that could be collected if the United States auctioned import quotas. The IIE--Hufbauer, et al--estimated that about $7.5 billion could be raised by auctioning import quotas that were in force during 1984. For the current period, IIE--Bergsten, et al--estimate that around $9 billion could be collected. 13/ The current period estimate appears to rely heavily on the 1984 estimate. IIE's revenue estimates are more than twice as large as CBO's estimates. There appear to be five major reasons for this discrepancy:

1) IIE's estimates include a VER on automobiles, whereas ours do not. The U.S. government did negotiate VERs for automobiles with Japan that covered 1981 through part of 1985. But the United States discontinued that agreement in 1985. Japan, however, has continued to maintain export limits on auto exports to the United States without any negotiated agreement with the United States. Thus, even though automobile imports from Japan are probably lower than would be the case without the Japanese restraints, the U.S. government cannot sell rights to a quota that it does not control. Hufbauer estimated the quota rents of the VER on autos in 1984 to be about $2.2 billion.

2) IIE--Hufbauer, et al--estimated that auctioning the rights under the Multi-Fiber Agreement would yield about $1.8 billion. In an IIE study in progress by William Cline on this issue, Cline has preliminary quota rent estimates of about $4 billion. 14/ Our estimates are almost half of Cline's estimates for two reasons. First, and most important, our estimates are for only those imports of textiles and apparel covered by binding MFA quotas. Cline uses all textile and apparel imports from non-OECD countries, which overstates the imports directly covered by the MFA by over 80 percent. Second, Cline uses an average quota

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13. In an article by Bruce Stockes just published on February 14, 1987, in *The National Journal,* entitled "Selling Quotas", IIE is quoted as estimating that about $5 billion could be raised by auctioning existing import quotas. This estimate does not include the VER on autos. The main difference between this estimate and our estimate is our lower quota rents for steel.

14. William Cline, "The Future of World Trade in Textiles and Apparel," Institute for International Economics, forthcoming.

rent per import of 25 percent for apparel and 15 percent for textiles. As noted earlier, setting an average rent for all textile and apparel imports requires a great deal of judgement, since little of the relevant data is available. Based on previous CBO studies of the effects of the MRA, we chose slightly lower average rents than Cline. 15/

3) IIE estimated that the VER in steel produced about $2 billion in quota rent to foreigners. Our estimates, which rely on the CBO model, are about half of this estimate. It is hard to compare the two estimates for steel because they were derived using different methods. Some of the difference arises from the major depreciation in the dollar since 1984 and other changes in economic conditions.

4) The sugar quota has been almost cut in half for 1987.

5) IIE--Bergsten, et al--appears to have included nontariff barriers other than import quotas, such as the cargo preference rules for the maritime industry.

TABLE 5. A ROUGH COMPARISON BETWEEN CBO'S AND IIE'S ESTIMATES OF QUOTA RENTS IN 1987 (In billions of dollars)

	CBO	IIE
Sugar	0.3	0.4
Dairy	0.2	0.3
Meat	0.0	0.1
Machine Tools	0.1	0.0
Steel	0.7	2.0
Textiles	0.2	0.3
Apparel	2.2	2.0-4.0
Autos	0.0	2.2
Other	0.0	?
Total Quota Rents	3.7	9.0

SOURCE: Congressional Budget Office; Institute for International Economics.

15. See *Protecting the Textile and Apparel Industries,* CBO Staff Working Paper, September 1985.

cc: Ned Gramlich